PRIME CONTROLS
Metal Sensing Solutions

TestAlert
BRINGS OLDER CAN LEAK TESTERS INTO THE 21ST CENTURY

Operating Instructions

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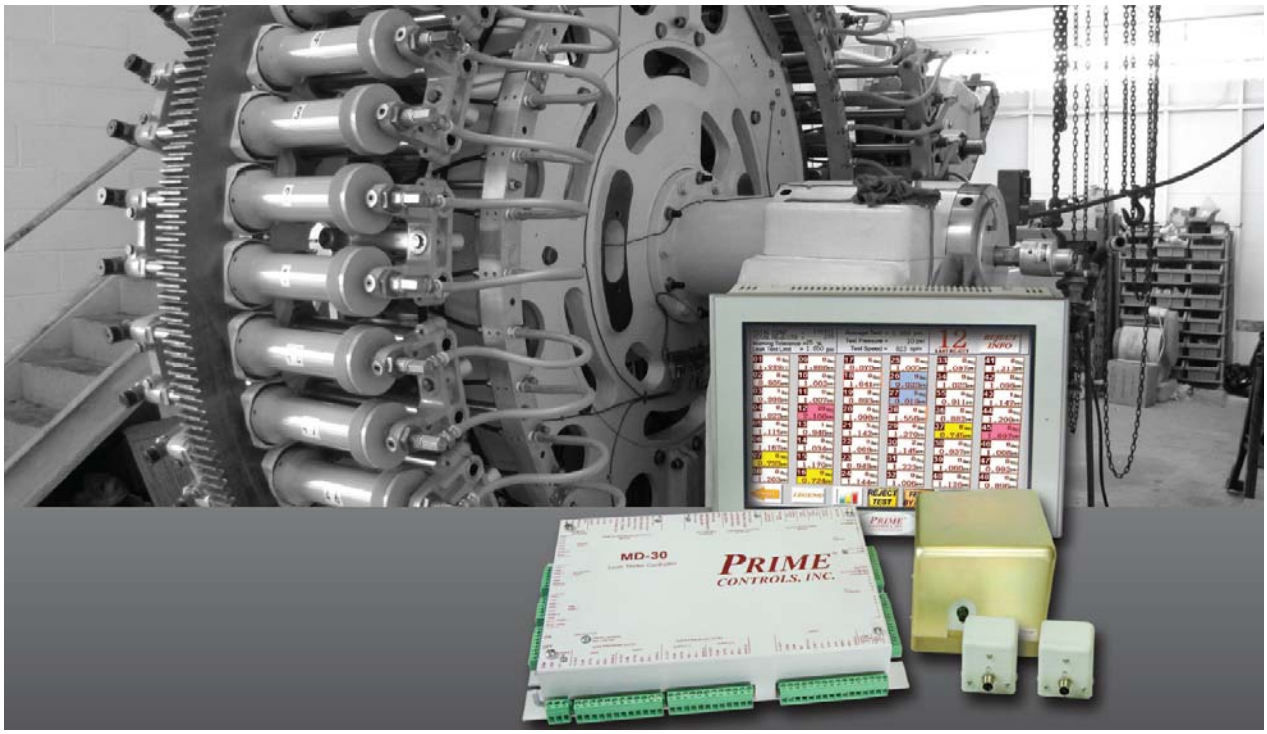

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Introduction

Thank You

We appreciate your purchase of the Prime Controls TestAlert system. You will quickly find this to be a vast improvement over other Leak Tester Controllers out on the market today. The goal of our development team was to create a system that was not only intelligent, but also intuitive, allowing your personnel to keep the tester at its peak performance. If you have any questions about this system, or comments for making it better, please let us know. I would also be happy to provide you with setup assistance and training on this product. There are many features and capabilities with this system. Let me know so I can help you use it to its fullest potential.

Again, thank you for your business.

Mark Mohn,
Sales Manager
Prime Controls Inc.

About Prime Controls

Prime started in 1992 as a privately owned company located in Kettering, Ohio, a suburb of Dayton.

Originally, Prime branched off from Hyde Park Electronics, Inc. (Schneider Electric Sensor Competency Center) to market and improve the technology of Double Sheet Detectors. Prime's initial goal was to improve the product line with state-of-the-art designs.

By 1997 Prime accomplished that goal by replacing or improving all the previous products with features such as pushbutton calibration, metal optimized auto-frequency adjustment, international ready power supply, simple package, quick disconnect control, quick disconnect sensors, self test and fault indication.

Since 1997 Prime provided additional products generated by customer suggestions for improvements. Totally new detectors were designed to provide auto-calibration, adjustable reject thresholds, under-thickness detection, auto-thickness compensation, thin foil detection and improvements in detecting difficult metals like copper, stainless steel and magnesium.

Today Prime Controls is the world's foremost Double Metal Sheet Detector supplier, providing products and services to can making, automotive, appliance, circuit board and other metal forming sectors. Our company is committed to the development of new products with the most advanced available technology. Our growth strategy is focused on providing products that simplify metal detection operation and provide the highest possible reliability for our customers.

We are one of a handful of companies that manufacture metal detection and related products in our US factory. We are the world supplier of Double End and Tab Detectors for high speed Easy Open End presses for beverage and food cans. A Prime Controls detector has inspected virtually every food and beverage can with a pull-tab end, in the world. Our primary technology is the application of eddy current measurement. We also manufacture high-speed leak detectors for cans and ends using air and light technology.

One of our growth goals is to expand our sensing and controls product line by employing talented technical personnel and providing them with the tools to design products that will meet future customer needs.

We're not done. Many more products and innovations are in development. Stay posted on our web site for new product releases, and let us know if you’re looking for a particular solution. We are always willing to discuss new ideas and solutions. About 99% of the products we have today originated as an idea from one of our customers. We thank you.

TestAlert Purpose

The ***TestAlert*** system updates older can and end leak testers with 21st century touch-screen technology. Many 3-piece and aerosol can-makers have air pressure leak tester machines that have outdated test data capabilities.

Prime Controls' ***TestAlert*** system is designed to retrofit older leak testers and bring them up to date with enhanced data readout and reporting capabilities. The basic TestAlert system includes an MD-30 control module, 2 air pressure sensors, a resolver to sync the system to the tester machine, and a touch screen control panel.

The colorful touch screen display provides a user-friendly graphic interface with screens for home, set up, diagnostics, and running test data by pocket. The running test data screen shows the absolute leak readings of each pocket in PSI, and each pocket can be highlighted to show additional test data.

The screen can also display a bar graph of all the pockets' accumulated test data to show emerging trends. The control system tracks the history of each tester pocket.

This can indicate impending problems with a particular pocket, which helps predict and prevent maintenance shutdowns and lost production time. Error message screens display helpful troubleshooting tips to assist the operator in getting the leak test machine up and running with minimal downtime.

The TestAlert's set-up screen provides prompts to help the operator quickly and easily set up the system, and it stores the specifications for up to 3 different products which makes product changeovers faster and easier. The control system has e-mail reporting and networking capabilities, and leak readings are transferrable to all testers in the plant to maximize flexibility.

TestAlert Components

The TestAlert system consists of 7 major parts:

1. **MD30 - Controller** – Mounted inside of enclosure. This unit has all of the wiring from transducers, timing generator, sensors and switches connected to it. The MD30 contains the main processor which controls the tester and makes all of the decisions pertaining to testing and information gathering.

2. **MI100 – Touch Screen Display** – This unit can be mounted through the door of the enclosure containing the MD30, or separately in its own enclosure so it can be viewed easily by the operator. The MI100 is used to setup the system on the tester. All of the parameters are entered using the touch screen display. There are also additional software packages available for additional functionality.

3. **TE200/TE201 – Timing Generator** – This unit is mounted on the tester and is wired to the MD30 and will replace the existing timing generator. Placement is typically on either the infeed star wheel shaft, or the reject star wheel shaft. The TE200 uses a rubber flap for interfacing with the shaft, while the TE201 uses a keyed shaft.

4. **TD10 – Pressure Transducers** – This unit will replace the existing TD5 transducers. The TD10 transducers supply absolute pressure values to the MD30 controller. This allows the system to display pressure in PSI values, and helps with easy setup of the reject limit.

5. **AC400-7 Relay Bank** – Mounted in the same enclosure as the MD30, this unit provides an interface between the MD30 DC outputs with the AC solenoids of the air tester. There are 7 relays prewired on a DIN rail: Air Spool, Low Pressure, Test Air, Run/Stop, Even Reject, Odd Reject, and Feed Control.

6. **PS503 – Power Supply** – This is a 24vdc, 4.2A power supply that supplies all of the TestAlert components including the external sensors.

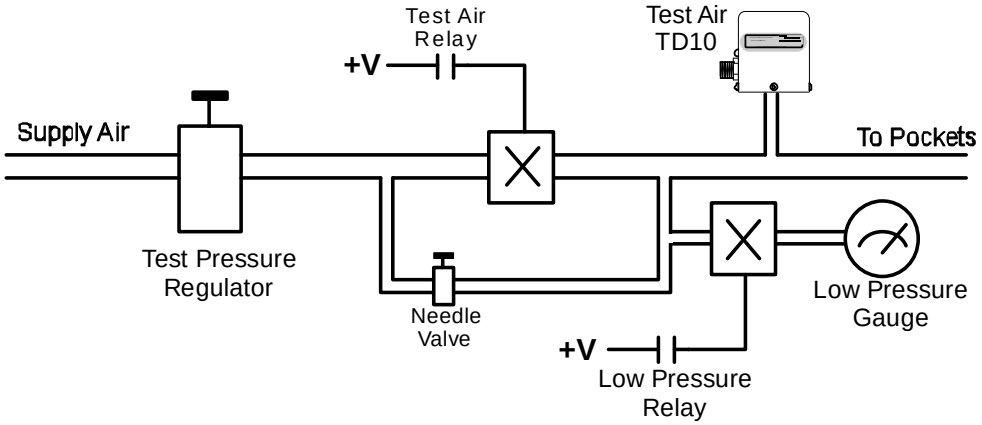
7. **Sensors and Switches** – These are plant-supplied proximity sensors and mechanical switches mounted on the main control area of the tester, or mounted on the MD30 enclosure.

Chapter 1: Mechanical Installation

Pneumatic Diagram with Supply Pressure Transducers

Rotary Shaft Tester (No Container / No Air)

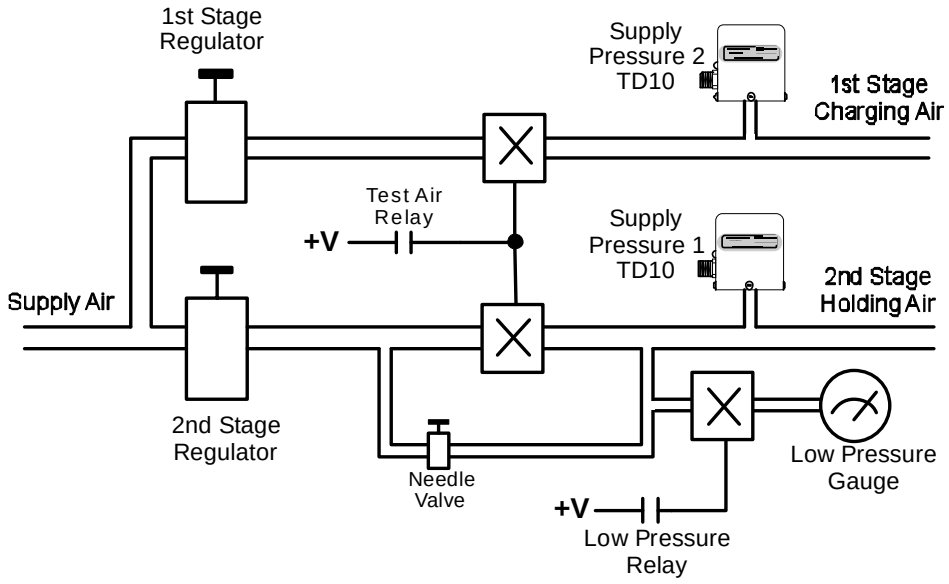
The Rotary Shaft Tester typically has an AP model number. This tester has spool valves on both the incoming test air and on the Test Air side of the tester. On this type of tester, the test air is fed directly into the main rotating tester shaft. Be sure to connect the TD10 into the air line after the regulator and the test air solenoid so that the MD30 can monitor the test pressure going to the pockets.



Rotary Shaft Tester (AP Models with air and test spool valves)

Converted Flat Valve Tester (No Container / No Air)

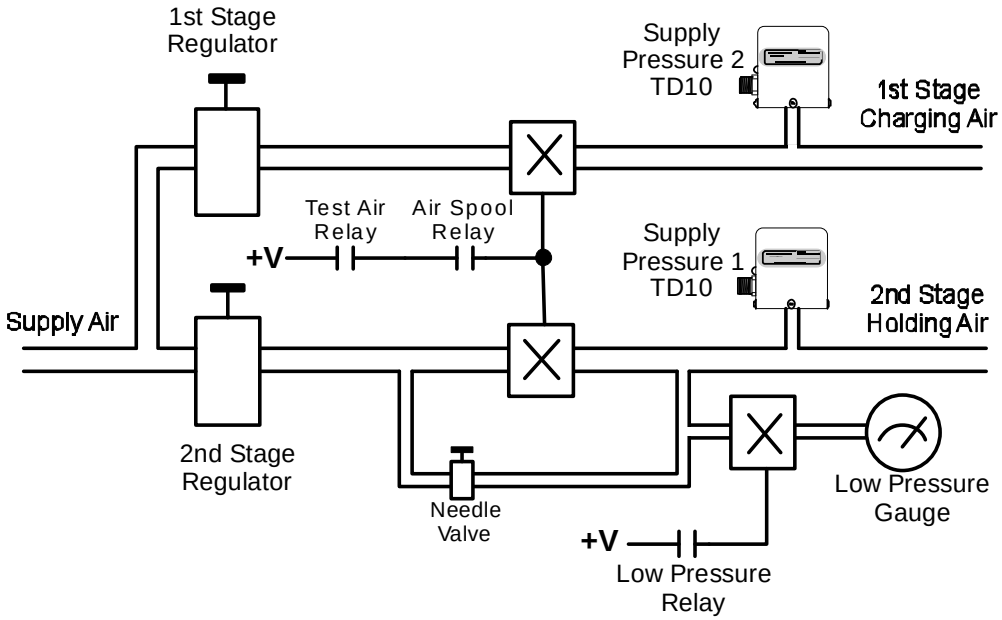
Older Flat Valve testers have 2 stages of air. One is for charging the pocket while the pocket is being vented to atmosphere, and one stage for holding the pressure in the pocket. Converted Flat Valve testers have spool valves added to the tester to control the charging air to each individual pocket. Connect the TD10s as shown below so that both channels can be monitored. If only one TD10 is desired, use it to monitor the 2nd Stage Holding Air.



Converted (spool valve ring) Flat Valve Testers

Original Flat Valve Tester

Original Flat Valve testers do not have the capability of controlling air to each individual pocket. The air would be on to all pockets at the same time. Some systems used a method of external timing, monitoring the flow of cans to shut off the test air and save wear and tear on the tester. When the Test Air Relay and Air Spool Relay are wired in series, the MD30 can control the Test Air based on cans present in the tester.



Original Flat Valve Testers

TD10 - Pressure Transducers

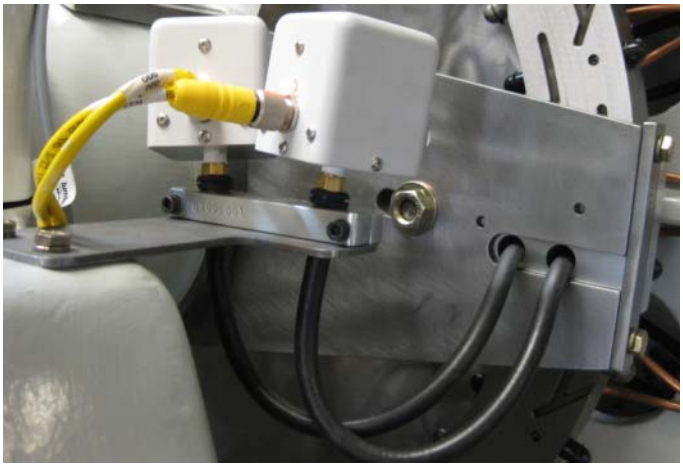
The TD10 pressure transducer is used in two places on the tester. The main location is to measure the leak pressure coming off of the test block. Depending on the type of tester, there may be one TD10, for a single port test block, or two which would measure even and odd channels. An additional TD10 is used to measure the incoming supply pressure. For some older flat valve testers, two supply TD10 units are used to measure the charging stage and hold stage air. The Test Supply Pressure TD10 can replace (or be in parallel with) the Pressure Limit Switch, and allows the MD30 to monitor the incoming test pressure so that it is at the optimum level.

The pressure port on the TD10 is compatible with the threading of the older TD5P transducer. A Prime Controls CBL113-x is used to connect each TD10 to the MD30 controller.

Can Type	Model Number	Linear Range	Function	Proof Pressure
Food Cans/Ends	TD10-015-2	0 to 2 PSI	Test	15 PSI
Food Cans/Ends	TD10-045-15	0 to 15 PSI	Supply	45 PSI
Aerosol Cans	TD10-045-5	0 to 5 PSI	Test	45PSI
Aerosol Cans	TD10-225-105	0 to 105 PSI	Supply	225 PSI

Mounting Guidelines

It is recommended that the supply air be filtered going into the tester to minimize any oil or water in the supply lines. This is crucial for the accuracy and longevity of the TD10 transducer. When mounting the TD10 transducer, make sure it is mounted upright with the threaded pressure port facing downward. This will reduce the amount of oil that can accumulate in the transducer.

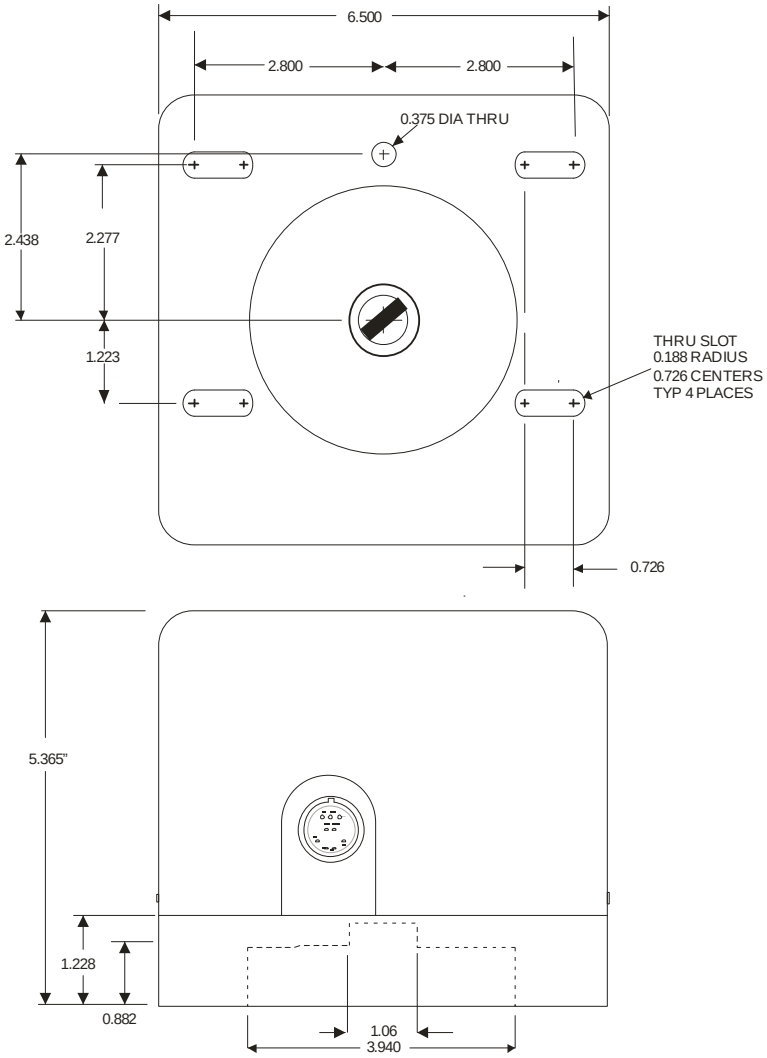


Also be sure that the pressure exposed to the TD10 transducer is not over the rated burst pressure. This can cause damage to the unit.

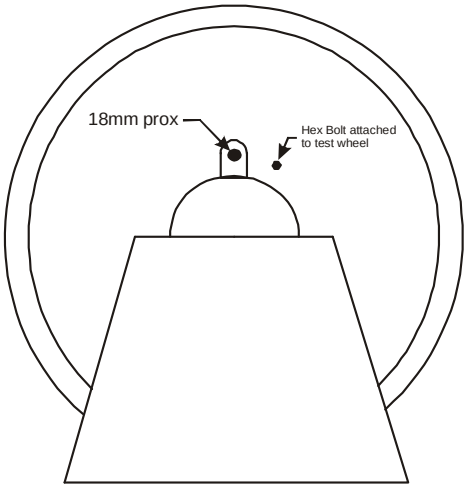
TE200 / TE201 - Timing Generator and Home Sensor

The TE200 / TE201 timing generators are designed to be a drop in replacement for the older Timing Generators used with the MD2, MD3 and MD20 systems. There are two different mechanical connections with this series. The TE200 uses a rubber flap to connect to the rotating shaft. The TE201 uses a keyed shaft to attach to a timing chain or other coupling.

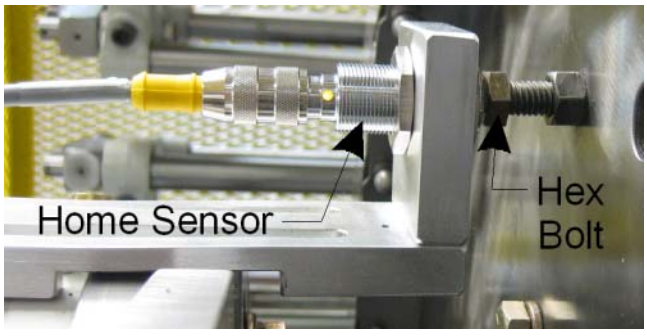
The Home sensor is used to give the MD30 one pulse per revolution of the tester. This insures that the MD30 is accurately tracking the test wheel. The Home Sensor should be mounted on the test block side frame of the tester. The home sensor must accurately sense a hex bolt mounted to the test wheel.
The Home Position of the tester is when the Home Sensor has just started to detect the Home Flag (hex bolt). It is at this position where all of the tester component positions are defined.



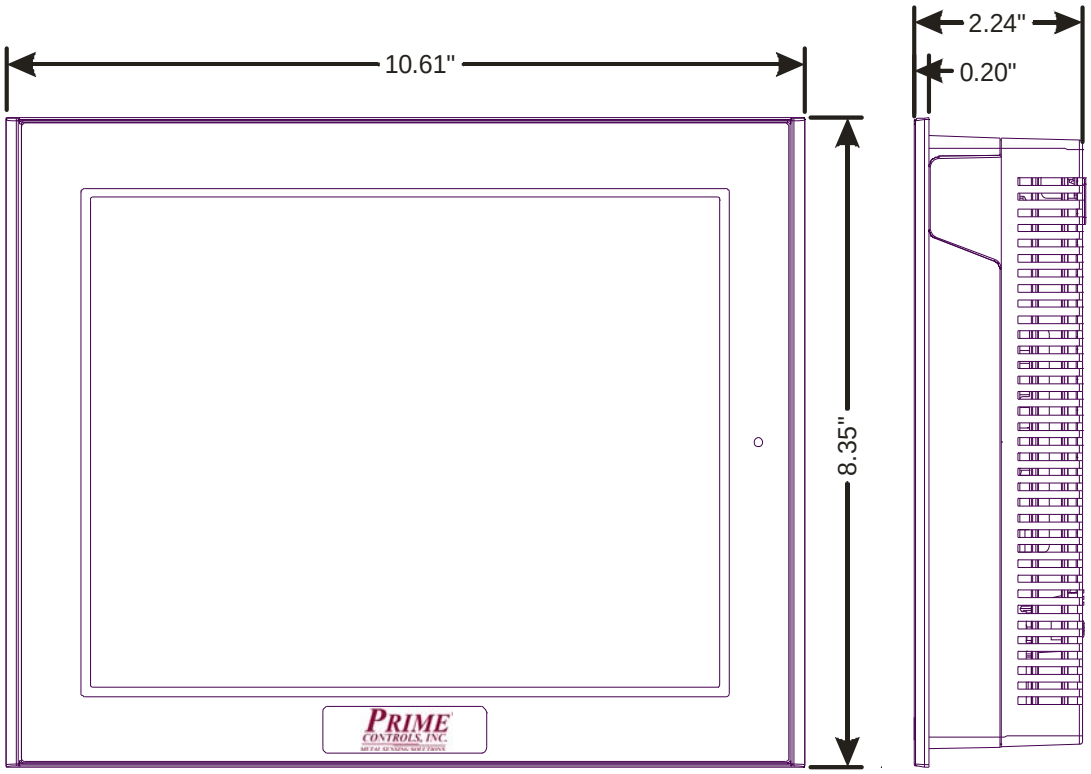
TE200 – Shown with rubber flap attachment



Mounting Position of the Home Sensor

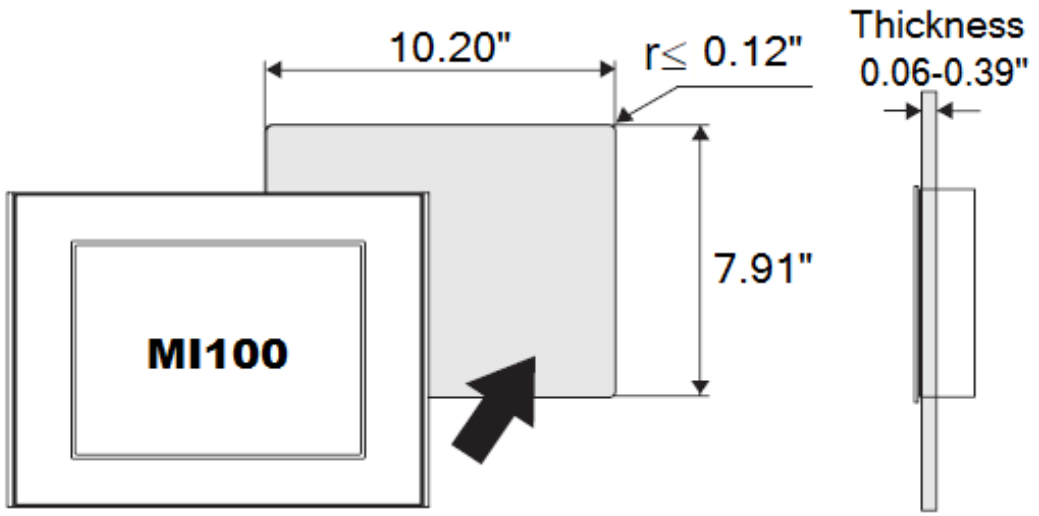


Panel opening for MI100 – Touch Screen Display



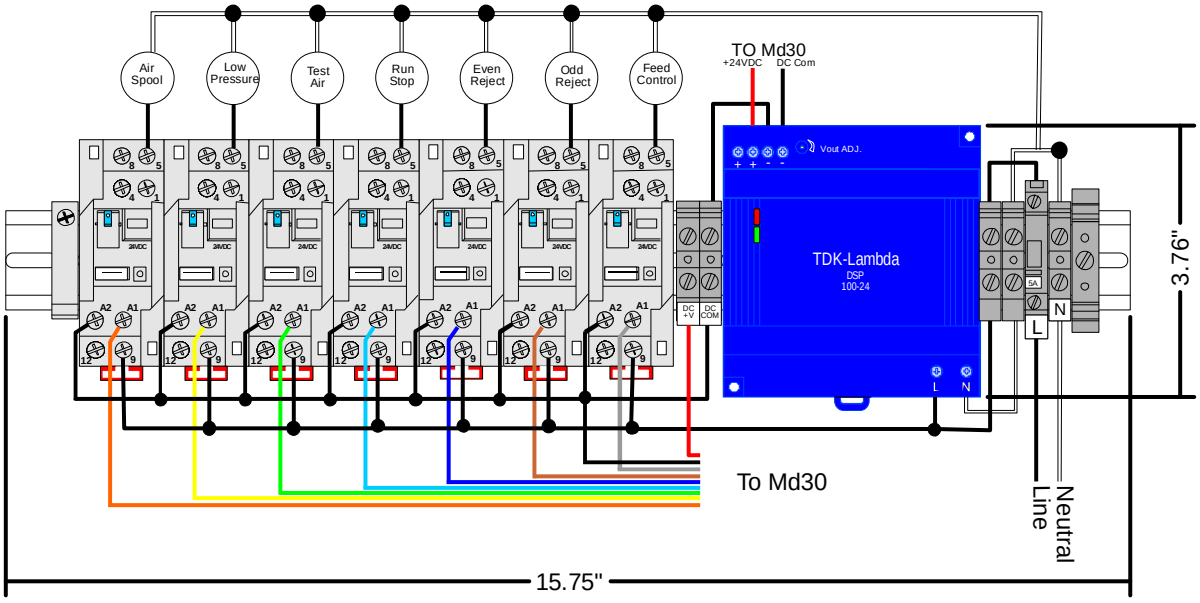
MI100 – Operator Interface

It is recommended that the MI100 be mounted in an enclosure to protect it from dust and dirt. For good ventilation of the MI100, be sure to install the unit at least 4.0” (100mm) away (on all sides) from other components in the enclosure. Take care in mounting the MI100 screen, placing it in an area where it will not be easily hit by other machinery as this will damage the screen and void the warranty.



MI100 – Panel Cutout Dimensions

AC400-7 and PS503 – Relay Bank and Power Supply



AC400-7 and PS503 – Wiring and Dimensions

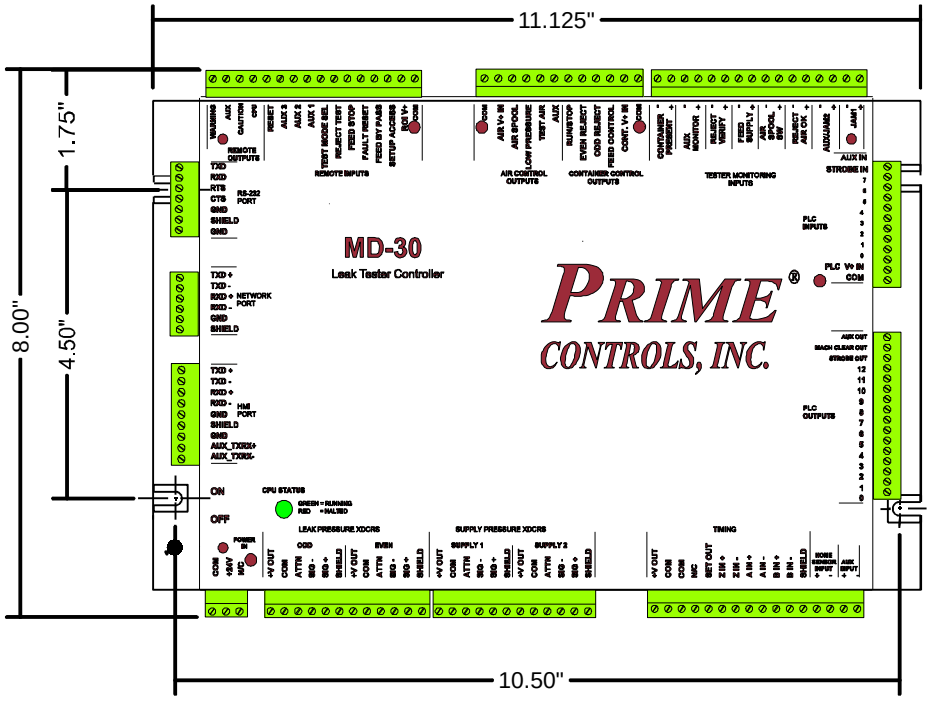
The AC400-7 provides an interface between the MD30 outputs and the solenoids on the air tester. There are 7 relays on this unit that provide power to the following solenoids:

- Air Spool
- Low Pressure
- Test Air
- Run Stop
- Even Reject
- Odd Reject
- Feed Control

It is recommended to mount the AC400-7 above the MD30 in the control enclosure so it can be easily wired to the top of the MD30. The unit is pre-wired to allow for direct connection to the MD30.

MD30 Controller

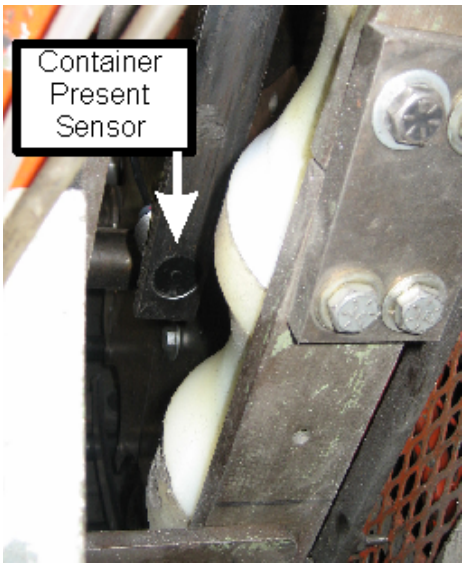
If possible, the MD30 controller should be mounted directly underneath the AC400-7 and PS503 power supply. Be sure to provide enough room for wiring to the connectors along each side of the unit.



Sensors and Switches

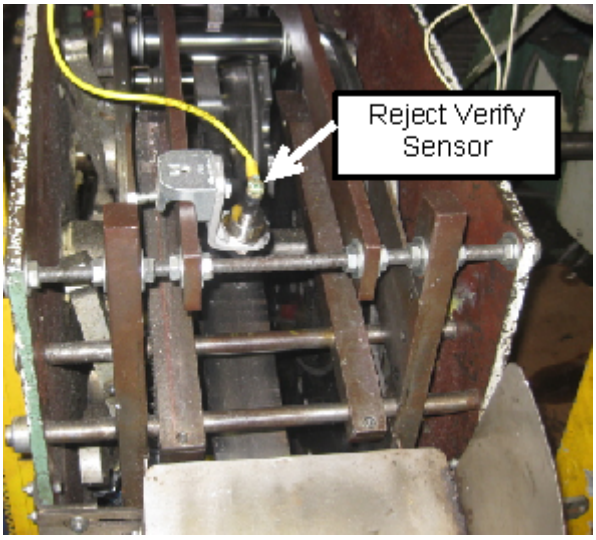
Container Present Sensor

The container present sensor is used to tell the MD30 system which pocket a container is going into so it can accurately track it through the system. This can be any type of inductive proximity sensor, typically an 18mm or 30mm barrel. The prox is mounted on the infeed screw or infeed star-wheel. The picture to the right shows the container present sensor mounted in the infeed screw area. It is important that the can is captured at the point where it is being sensed by the container present sensor. The sensing range of the prox must be far enough to accurately sense the container as it passes by.



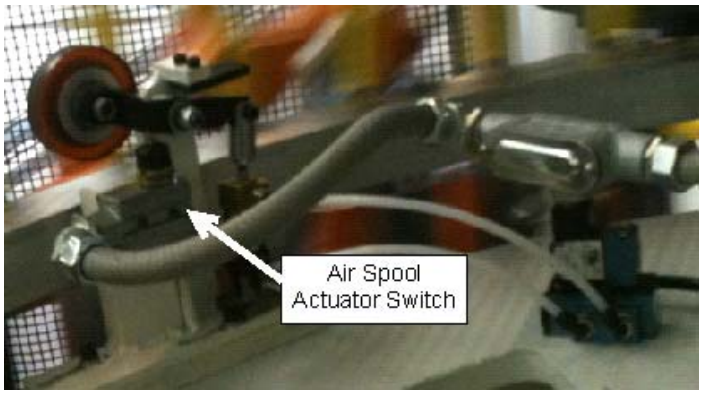
Reject Verify Sensor

The reject verify sensor is used to verify that the rejector system is working properly. If a rejected container is not sensed by the reject verify sensor, the MD30 will shut down the tester immediately so that the bad container does not make it to the palletizer. The reject verify sensor must be mounted in the reject chute at a position where it will accurately sense each rejected container. In most cases, this is an inductive prox, however, some companies prefer to use a photoelectric sensor.



Air Spool Actuator Switch

The Air Spool Actuator Switch is typically a mechanical limit switch which is depressed when the air spool actuator is in the charging position. This device tells the MD30 that the Air Spool Actuator is working properly and that pockets are actually being charged with air. The MD30 also verifies that the solenoid is operating fast enough to charge the correct pocket.

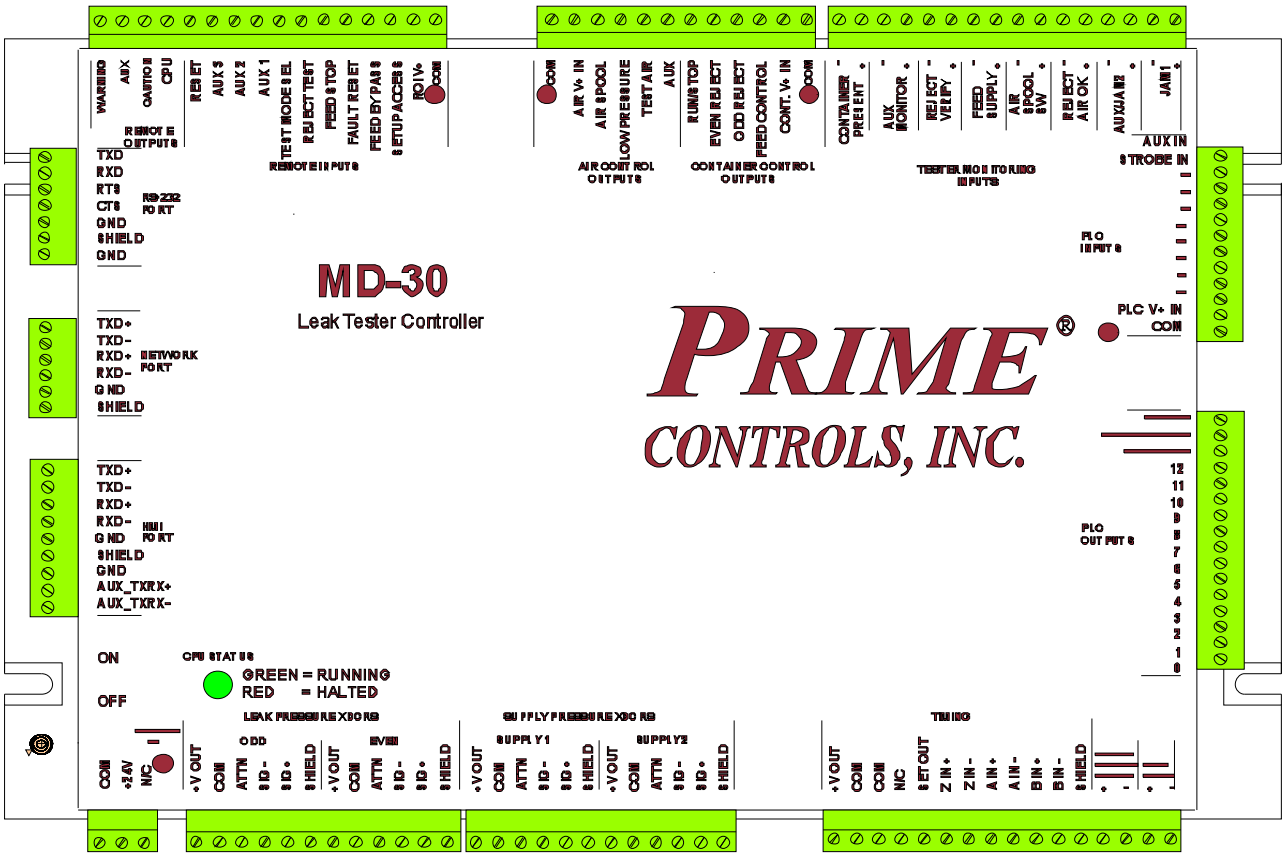


Chapter 2 – Electrical Wiring

LED Indication on main board

The MD30 controller has multiple LEDs around the unit to indicate power being supplied to each of the main areas and to display the status of the CPU. All inputs and outputs are opto-isolated for protection. This requires separate power lines to each section so that damage to the board is minimized if there is a short in the wiring. The five LED power indicators show that power has been applied to: **ROI V+ IN**, **AIR V+ IN**, **CONT V+ IN**, **PLC V+ IN**, and the Main **+24V** input terminals. If one of these is not lit, check the wiring to that terminal and to the COM terminal.

The **CPU STATUS** indicator should be Green which indicates that the processor is running correctly. If it turns Red, this indicates that the processor is halted.



MD30 LED indicators and terminal labels

Terminal Definitions

This is a brief explanation of the terminals on the MD30 board starting from the power input and working counter-clockwise.

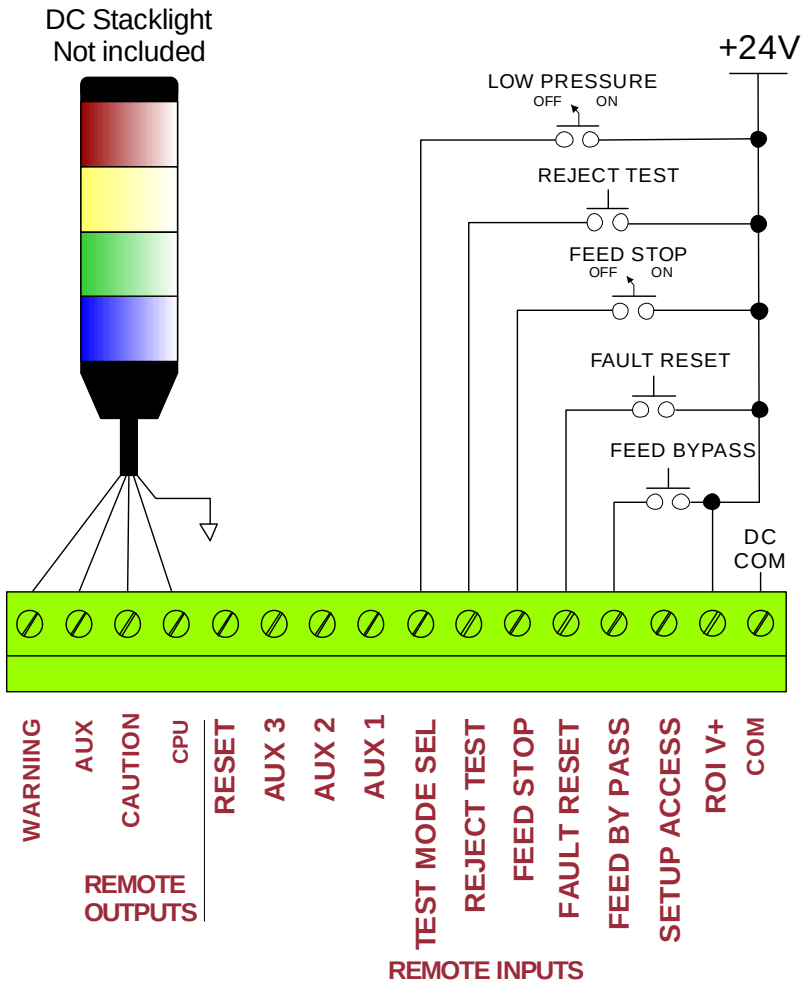
Section	Terminal	Definition
Power In	COM	DC Common input from power supply
	+24V	+24VDC input from power supply
Leak Pressure XDCRS Odd and Even	+VOUT	Output voltage to power the pressure transducers
	COM	DC common for pressure transducers
	ATTN	Attention signal for serial communication
	SIG-	Serial communication line negative voltage
Supply Pressure XDCRS Supply 1 & 2	SIG+	Serial communication line positive voltage
	SHIELD	Terminal to connect shield from pressure transducers
Timing	+V Out	Output voltage to power the timing generator
	COM	DC common for timing generator
	N/C	Not Connected
	Set Out	Communications with the timing generator
	Z IN +	Differential input from timing generator
	Z IN -	Differential input from timing generator
	A IN +	Differential input from timing generator
	A IN -	Differential input from timing generator
	B IN +	Differential input from timing generator
	B IN -	Differential input from timing generator
	SHIELD	Terminal to connect shield from timing generator
	HOME SENSOR INPUT +/-	Home sensor prox input from test wheel
	AUX INPUT +/-	Aux input (currently not enabled)
TO PLC	0 – 12	Outputs to the PLC for communication. These are PNP outputs (currently not enabled)
	STROBE OUT	Communication output to PLC
	MACH CLEAR OUT	PNP output turns on when the machine is clear of containers. Typically wired to the frequency drive for main tester wheel
	AUX OUT	Additional output (currently not enabled)
FROM PLC	COM	DC Common
	PLC V+ IN	Power supply input (+24VDC) to power the PLC I/O
	0 - 7	Inputs from the PLC for communication. These are PNP inputs (currently not enabled)
	STROBE IN	Used to synchronize communication coming from the PLC (currently not enabled)
	AUX IN	Auxiliary input
TESTER MONITORING INPUTS	JAM 1 +/-	Jam 1 input from the Jam sensor or limit switch. Can be NPN or PNP
	AUX/JAM 2 +/-	Aux or Jam 2 input from the Jam sensor or limit switch. Can be NPN or PNP.
	REJECT AIR OK +/-	Input from the Reject solenoid limit switch (currently not used)
	AIR SPOOL SW +/-	Input from the Air Spool Actuator limit switch. Can be NPN or PNP
	FEED SUPPLY +/-	Feed supply sensor input detecting cans up in the infeed rails. Can be NPN or PNP
	REJECT VERIFY +/-	Reject verify sensor input to detect can passing out reject chute. Can be NPN or PNP
	AUX MONITOR +/-	Aux input (currently not used)
	CONTAINER PRESENT +/-	Container present sensor input detecting cans going into tester. Can be NPN or PNP
CONTAINER CONTROL OUTPUTS	COM	DC common from power supply
	CONT V+ IN	Power supply input (+24VDC) to power the Container Control Outputs
	FEED CONTROL	Output to Feed Control relay to actuate can stop
	ODD REJECT	Output to odd rejector relay to reject failed container
	EVEN REJECT	Output to even rejector relay to reject failed container
	RUN/STOP	Output to the Motor contactor for the tester. When this output is off, there is an indicator on the Fault Reset button that illuminates.
AIR CONTROL OUTPUTS	AUX	Additional output (currently not enabled)
	TEST AIR	Output to Test Air valve solenoid. This turns off the incoming Test Air to the tester
	LOW PRESSURE	Output to Low Pressure solenoid. This output turns on when in Low Pressure Test
	AIR SPOOL	Output to Air Spool actuator to charge the spool valves
	AIR V+ IN	Power supply input (+24VDC) to power the Air Control Outputs
	COM	DC Common for the Air Control Outputs
REMOTE	COM	DC Common for the Remote Operator Interface Inputs

OPERATOR INTERFACE INPUTS	ROI V+ IN	Power supply input (+24VDC) to power the Remote Operator Interface Inputs
	SETUP ACCESS	External security switch input to act as password protection on MI100 screen
	FEED BYPASS	Input from external Feed Bypass momentary pushbutton switch. This input opens the Feed Bypass output at the correct timing position.
	FAULT RESET	Input from external Fault Reset momentary pushbutton switch. This input clears errors in the system.
	FEED STOP	Input from external Feed / Stop toggle switch. This input allows the user to stop cans from being fed into the tester.
	REJECT TEST	Input from external Reject Test momentary pushbutton switch. This input turns on the rejector to reject cans from the tester without causing faults in the system.
	LOW PRESSURE	Input from external Low Pressure toggle switch. This input initiates the Low Pressure test of the Leak Tester.
	AUX 1	Auxiliary input (currently not enabled)
	AUX 2	Auxiliary input (currently not enabled)
	AUX 3	Auxiliary input (currently not enabled)
	RESET	Input that performs a full reset of the MD30 controller (Typically not used)
REMOTE OUTPUTS	CPU	Processor status that the processor is working correctly. This is a Normally Closed output.
	CAUTION	Caution output turns on when any station has a bad seal warning.
	AUX	AUX output turns on when the tester has lost communications with the HMI for 20 seconds.
	WARN.	Warning output turns on when the tester is clearing after an Alarm condition, and until the alarm is reset.
RS-232 PORT	TXD	RS232 Transmit line (currently not used)
	RXD	RS232 Receive line
	RTS	Request to Send line
	CTS	Clear to Send line
	GND	Ground
	SHIELD	Terminal to connect shield from RS232 cable
	GND	Ground
NETWORK PORT	TXD +	Transmit Data positive voltage (currently not used. Use network on MI100)
	TXD -	Transmit Data negative voltage
	RXD +	Receive Data positive voltage
	RXD -	Receive Data negative voltage
	GND	Ground
	SHIELD	Shield for the network cable
HMI PORT	TXD +	Transmit Data positive voltage
	TXD -	Transmit Data negative voltage
	RXD +	Receive Data positive voltage
	RXD -	Receive Data negative voltage
	GND	Ground
	SHIELD	Shield for the network cable
	GND	Ground
	AUX_TXRX+	Auxiliary Transmit or Receive positive voltage
	AUX_TXRX -	Auxiliary Transmit or Receive negative voltage

Remote Inputs and Warning Indicators

For warning indication, a DC powered stack light can be used with the MD30. The MD30 will output a PNP (sourcing) output to drive the lights. LED lights are recommended. The AUX and CAUTION outputs can be configured via the touch-screen.
The input signals shown below relate to the pushbuttons that are typically already on the main control of the leak tester. The MD30 does require a sourcing input. Some other tester controls required sinking in the past, so be sure this is wired correctly.
Here is a description of each of the inputs:

- Low Pressure – Two position switch – turn switch to on position to run Low Pressure Test
- Reject Test – Momentary Pushbutton–used to turn on the reject mechanism to reject containers
- Feed Stop – Two position switch – used to control the can stop
- Fault Reset – Momentary Pushbutton – will clear out an error message on the MD30
- Feed Bypass – Momentary Pushbutton – will actuate can stop to feed containers when pressed

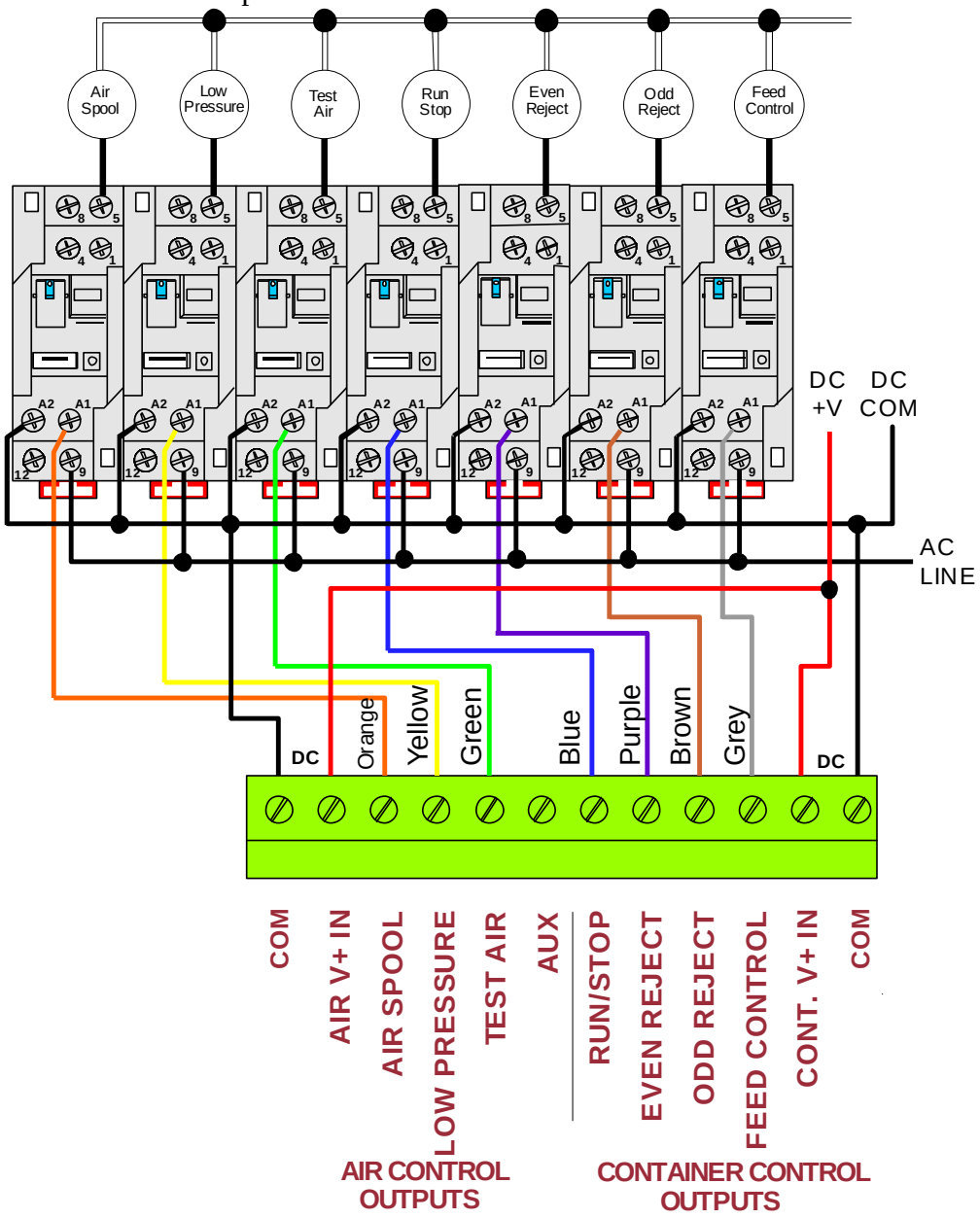


Outputs

The outputs of the MD30 typically are wired to the AC400-7 relay bank. The relay bank acts as an interface between the DC outputs of the MD30 and the AC Solenoids of the Leak Tester. Each relay is labeled with its respective solenoid output. For protection, the solenoid outputs are optically isolated and require voltage supplies to each side of the terminal.

If you are using DC solenoids on the tester, you will need to remove the AC Line wire from the relays and connect it to +24VDC.

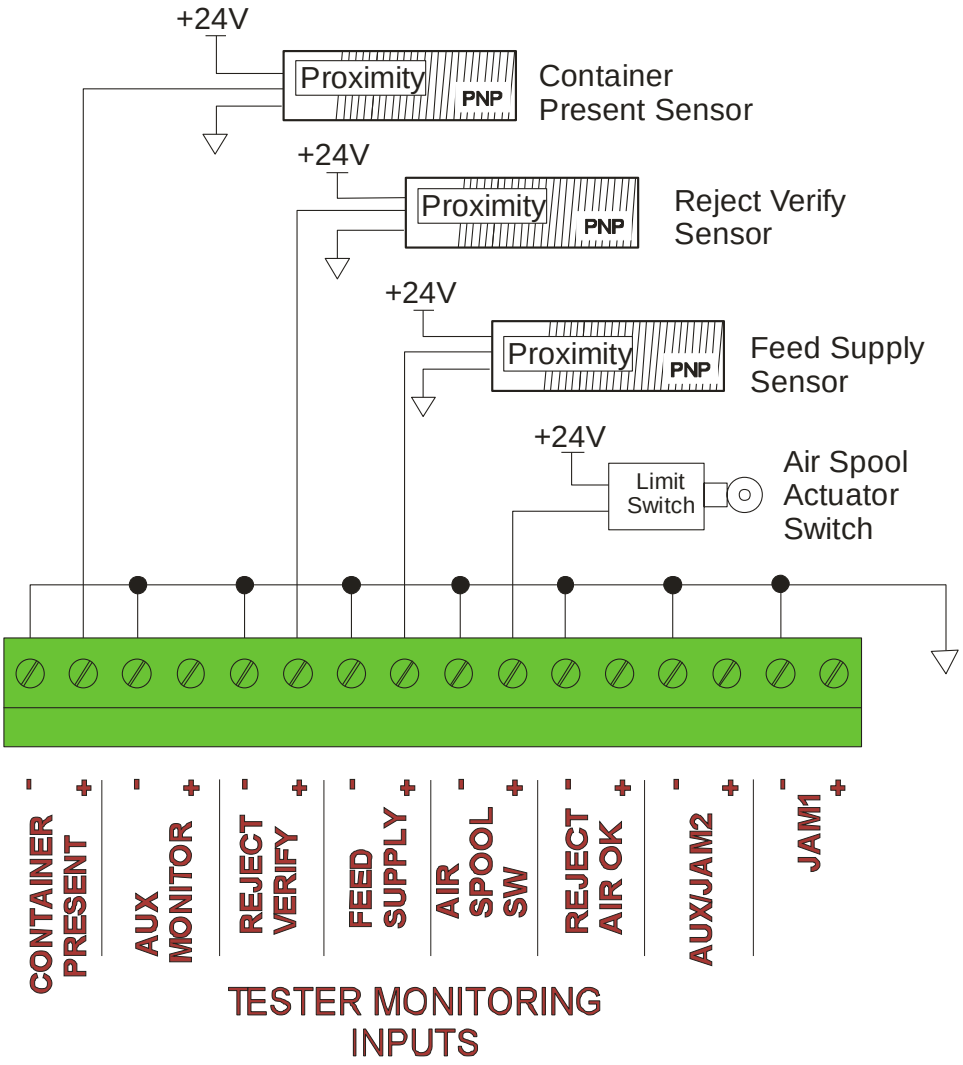
On testers with only one reject solenoid, both the odd and even outputs actuate at the same time, so it doesn't matter if the output is wired to the even or odd.



Tester Monitoring Inputs

The Tester Monitoring Inputs are where the sensors and limit switch inputs are wired. Each terminal has two positions for wiring (+ and -). The type of output from the sensor determines which terminal the output is wired to, and which terminal is connected to +24DC or DC COM. The wiring example below shows all PNP (sourcing) sensors. JAM1 and JAM2 inputs are not shown wired.

PNP (Sourcing)	Wire output to **+** Terminal	Jumper **–** Terminal to DC COM
NPN (Sinking)	Wire output to **–** Terminal	Jumper **+** Terminal to +24VDC

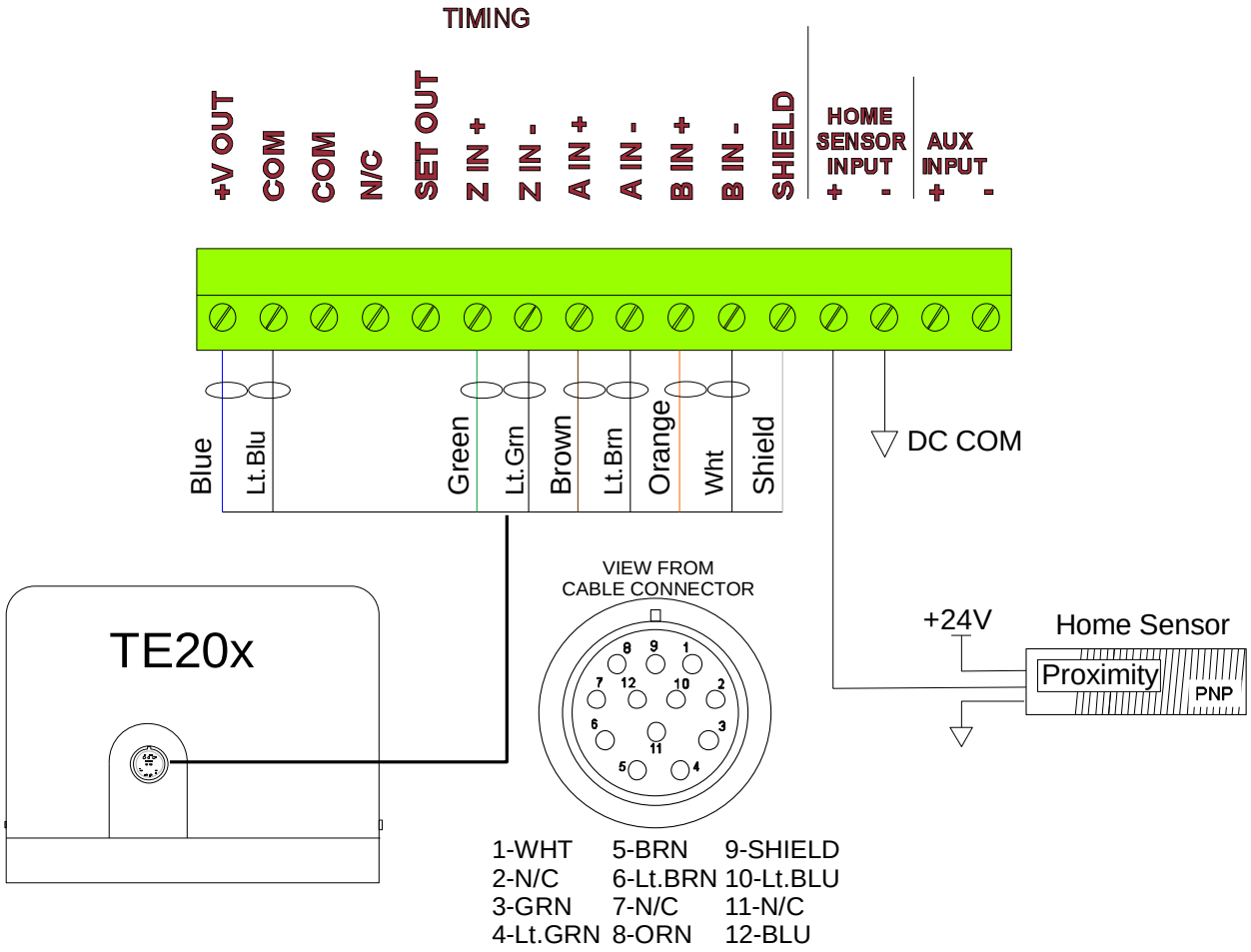


Timing Generator

The timing generator is wired to the MD30 control using a cable with an M23 connector. The Prime Controls part number for this cable is CBL130-xx (xx=5 for 5m, 10 for 10m). All 8 wires and the shield need to be wired to the MD30.

The Home Sensor input can be either NPN(sinking) or PNP(sourcing). The diagram below shows a PNP (sourcing) sensor. The Aux Input is for future expansion.

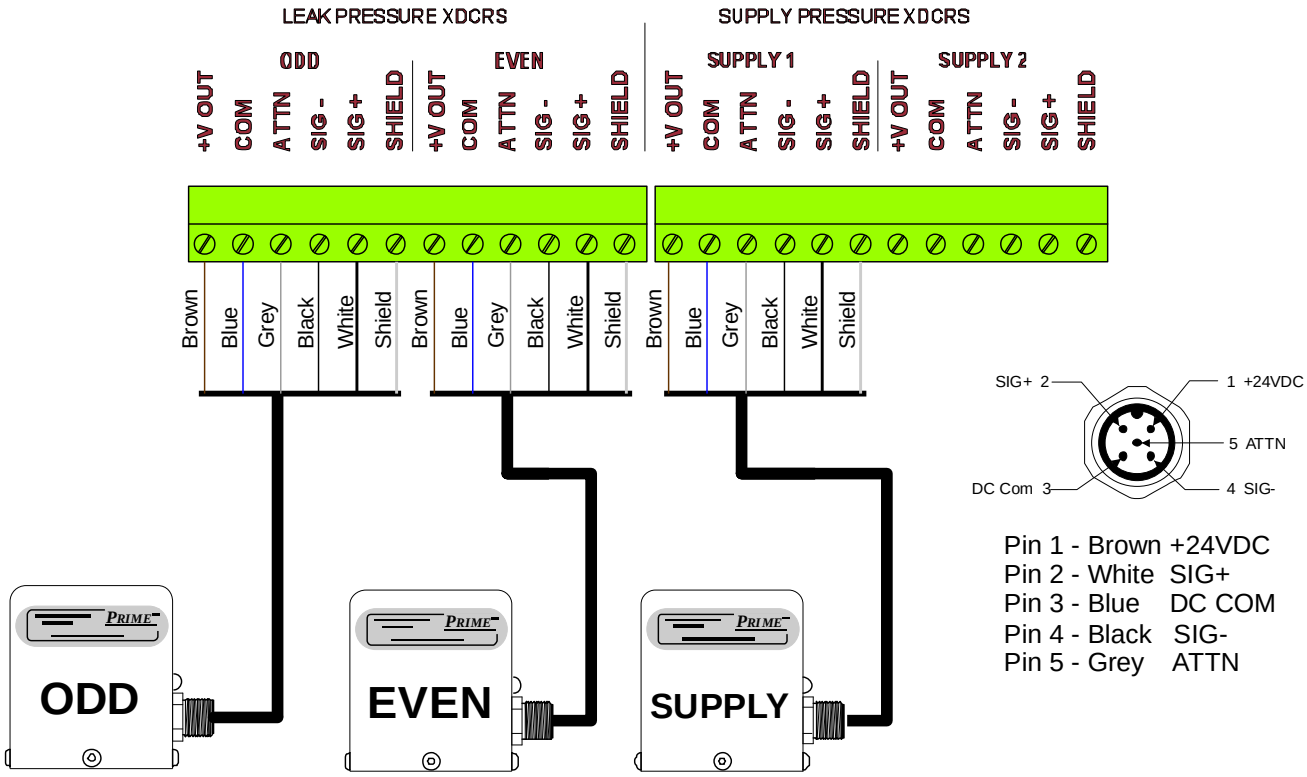
PNP (Sourcing)	Wire output to + Terminal	Jumper – Terminal to DC COM
NPN (Sinking)	Wire output to – Terminal	Jumper + Terminal to +24VDC



Leak Pressure and Supply Pressure Transducers

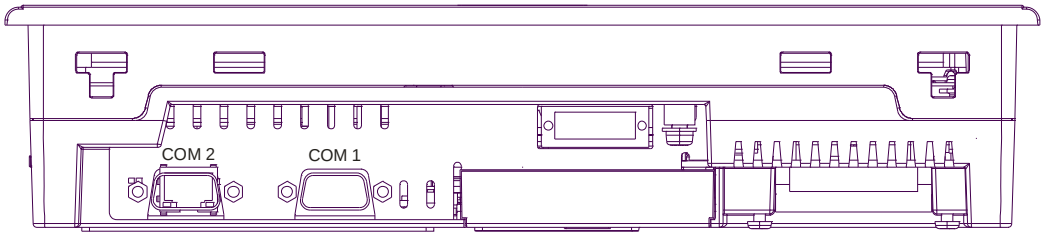
The pressure transducers used with the MD30 are different than the types used on previous tester controllers. The TD10 Pressure Transducers output an absolute pressure value which allows the system to show a true PSI value as its measurement. Depending on the type of tester, either one or two transducers are required (odd and even). If the tester requires only one transducer, it can be wired to the ODD terminal. The SUPPLY 1 input is used to monitor the supply (test) pressure of the Leak Tester. In some cases with flat valve style testers, a second transducer can be used to monitor the charging (1st stage) pressure. This transducer would be wired to Supply 2.

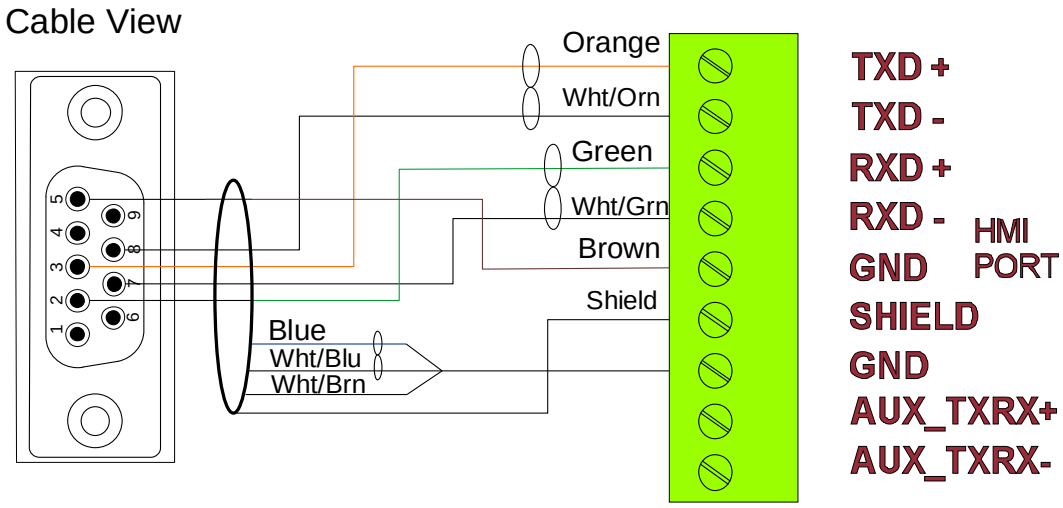
A Prime Controls CBL113-x (x=5 for 5m, 10 for 10m) is used to connect each TD10 to the MD30 controller.



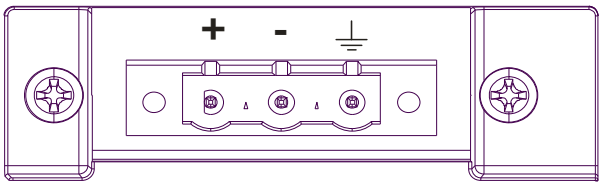
HMI

The diagram below details the connection between the HMI and the MD30. The connector is a standard DB-9 serial communications cable with a male connection. This connector gets plugged into **COM2** on the HMI. The Prime Controls part number for this cable is CBL140-xx (xx= 1 for 1m, 2 for 2m, 5 for 5m, 10 for 10m).





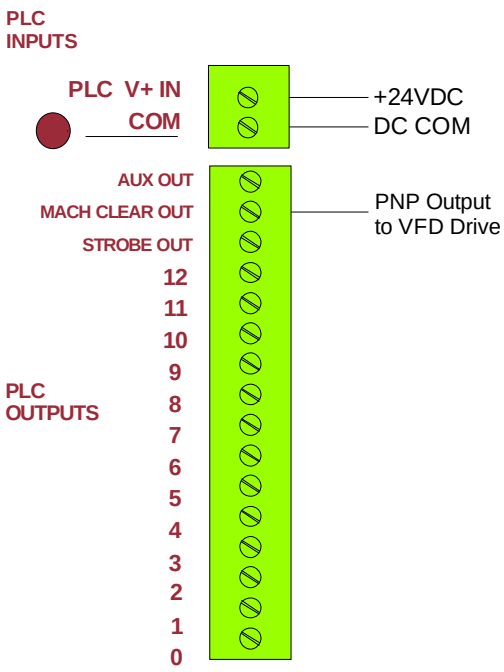
The MI100 touch screen display is powered by +24VDC power and 1.22A current. This can be connected to the PS503 power supply that is sold with the MD30 TestAlert package.



Power connector of the MI100 HMI (back side)

Machine Clear Output

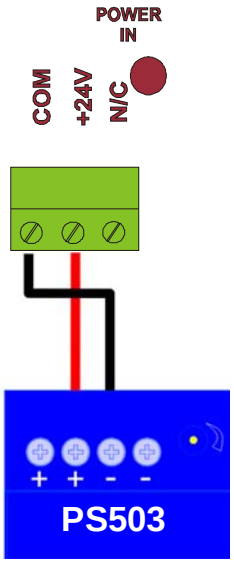
The Machine Clear Output is used as an input to the Motor Drive of the tester. This PNP (sourcing) output will turn on when there are no containers in the tester to allow the drive to go into a slow mode. When containers are ready to feed into the tester, this output will turn off.



Power Supply

The PS503 is the 24VDC power supply that provides power to the MD30, MI100 display and all other accessories. The power supply provides 4.2A of current, or 100W.

The power supply comes with a fuse block for protection. The recommended fuse is a 5A Slo-Blo 5x20mm. This fuse block will also fit a 5x25mm fuse if needed. A spare fuse is provided and is pre-installed in a special holder in the block.



Chapter 3: Touch screen Usage and Care

Only use finger to operate HMI

Use only your finger to operate the MI100 touch screen display. Using pens, screwdrivers, or hammers to operate unit may cause damage to or scratch the screen.

Screen protector

The MI100 Touch Screen comes with a clear plastic screen protector. We recommend that this unit only be used when the screen protector is in place to assure the longevity of the touchscreen. The screen protector will protect from minor scratches and dirt, but will not protect against damage to the screen in case of a hit or flying objects. This type of damage to the screen is not covered under warranty. Additional screen protectors can be ordered from Prime Controls.

Cleaning the screen

Only use a non-abrasive cloth to clean the screen. A mild detergent or water can be used if necessary.

Adjusting Brightness of the Screen

The MI100 Touch Screen display is shipped with the background brightness at maximum. If a lower brightness level is desired, follow this procedure.

1. Press and release the upper right corner of the screen within the black border.
2. Within one second, press the upper left corner of the screen within the black border.
3. The brightness can be adjusted using the arrows.
4. Press " X" to exit.

Chapter 4: Security on HMI

There are quite a few screens that need to be password protected to protect from inadvertent changing once the system is set up. There are three levels of security in this system. One level is for the operator, one for the electrician, and one for the supervisor and factory.

Once a password is entered, that password stays active for 15 minutes. After 15 minutes, the password will need to be re-entered upon moving to another password protected screen. Moving between screens within the 15 minute time limit, resets the timer to zero.

The password entry screen is shown at the right. All passwords are alpha-numeric with no special characters.

Secure Screens

The following screens are password protected:

- Reject Limit
- Diagnostics
- Parameter Setup
- Device Setup Procedure

Having these screens password protected keeps the operator from making any changes to the device. Be sure to keep the password in a safe place to impair any unnecessary tempering with the system.

Setting passwords

Out of the box, a brand new MI100 touchscreen will have its passwords set to be the number of the security level. For example, to enter a Security Level 1 window, the password is 1.

To set the MI100 passwords, you must go to the setup screen. Follow this procedure.

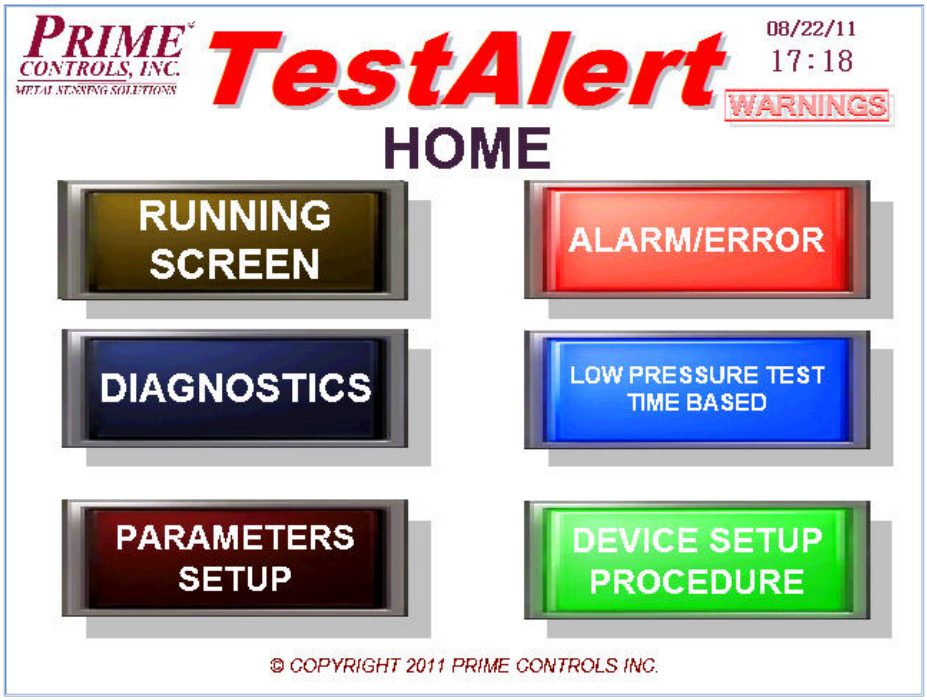
1. Touch the upper right hand side of the screen, let go, and within one second, touch the lower left hand side of the screen. This has to be done inside the black border of the screen.
2. A grey menu will appear on the bottom of the screen.

3. Press Offline. This will turn off communications with the MD30 controller and go into setup mode.
4. Press Password Settings and then Security Password.
5. At this point you will need to enter the password for Level 15 which is 15.
6. Boxes will appear to allow you to set passwords for Level 1-15. Currently the system only has a password defined for Level 1. ***Do not change the password for Level 15.*** This will keep our product support from helping you in case the password is lost.
7. The password chosen is alpha-numeric up to 8 characters.
8. Be sure to document the password chosen.

Chapter 5: Human Machine Interface (HMI) Screens

Home Screen

The Home Screen allows you easy access to the main areas of the system.

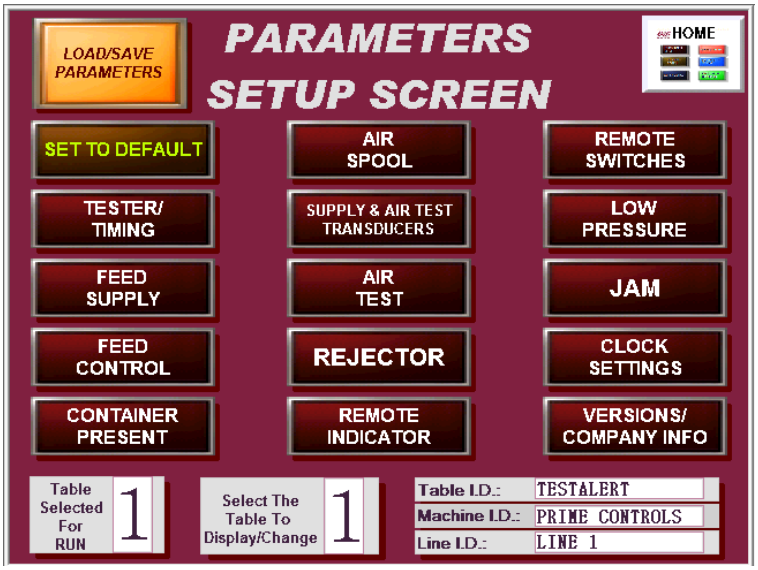


- Prime Controls Logo – Touching this will bring up contact information for Prime Controls.
- Running Screen – This button accesses the two main running screens when running the tester: Pocket display and Bar Graph display.
- Alarm/Errors – This button gives you more information about recent errors and help for them.
- Diagnostics – This button accesses many screens showing input and output triggering and positional data.
- Low Pressure Test – This button allows the operator to start a Low Pressure Test from the screen.
- Parameter Setup – This button allows all of the parameters/options required for setting up the tester
- Device Setup Procedure – This button accesses a menu-driven process for setting up the locations for each of the important devices on the leak tester.
- Warnings Screen – This button accesses the warnings area which shows a listing of warning messages for the tester.

Parameters Setup Screen

You can get to the Parameters Setup Screen directly from the HOME Screen. This is one of the first steps in setting up the TestAlert system on a tester. All of the parameters in the sub-menus must be set before going on to the Device Setup Procedure.

On the next page is a listing of all the parameters used to set up the TestAlert system. With this system, you can set up 3 separate parameter tables and easily switch between all of them using the selections at the bottom left of the above screen. You can also set up a parameter table while running a separate one.

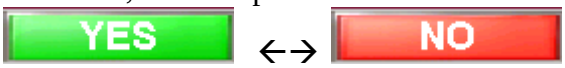


At the top of the screen is the Load/Save Parameters button. This operation is described in greater detail in Chapter 14.

When editing the parameters, there are three different ways of changing the parameter values: numerical, toggle and drop-down.

Numerical – to change a numerical value, just touch the value and a pop-up display will appear. At the top of the box, there is a minimum and maximum allowable value. If you try to put in a value outside the min and max, the unit will not accept the value and the box will stay up after the ENT (Enter) button is pressed. If you do not want to make any changes, press the CANCEL button to exit.

Toggle – The toggle box allows you to choose between one of two parameters. To change this parameter, press the box, and that parameter value will change.



Drop Down – This is used when there are more than two different selections available for a parameter. To change this type of parameter, press the value and the drop-down box will appear. From here, just select the desired parameter.

Home Position

Prior to setting up the position parameters, the tester must be positioned in the Home Position. This position is defined as when the reset flag (hex bolt on test wheel) has just started to be sensed by the Home Sensor. From here, position values can be estimated.

Listing of all parameters along with description

**Parameters with a * require the tester to shut down to make a change.

Parameter	Description	Default
Table I.D.	The save name when saving the configuration table. This can be set as the can type if setting up multiple cans on the tester.	Default
Machine I.D.	The tester part number, for identification purposes	
Line I.D.	The production line number	Line-N

TESTER/TIMING

Timing Generator Scale Factor*	Used to set the type of timing generator used on the tester. The numerator and denominator parameters are set so that the pulses coming from the encoder equal 100 times the number of pockets on the tester. Depending on the type of tester, the Timing generator will rotate either 4.0 or 4.5 times for each turn of the test wheel. You can divide the number of locations on the starwheel the timing generator is connected to into the number of pockets on the tester to determine this value. The standard encoder supplied with the TE200 timing generator is a 300 pulse per revolution encoder. The pulses are in quadrature, so the 300 pulses is multiplied by 4 and then by the number of revolutions the generator rotates for every rotation of the test wheel. Divide that value into the number of pockets times 100 to get the scale factor. 18 Station is 4.5 x --> 300 x 4 x 4.5 = 5400 pulses per rev --> Scale Factor 1/3 gives 1800 timing pulses per rev 36 Station is 4.5 x --> 300 x 4 x 4.5 = 5400 pulses per rev --> Scale Factor 2/3 gives 3600 timing pulses per rev 24 Station is 4.0 x --> 300 x 4 x 4.0 = 4800 pulses per rev --> Scale Factor 1/2 gives 2400 timing pulses per rev 48 Station is 4.0 x --> 300 x 4 x 4.0 = 4800 pulses per rev --> Scale Factor 1/1 gives 4800 timing pulses per rev	Numerator - 1 Denominator - 1
Minimum Operating Speed	Minimum machine speed for feed control on and for testing. The controller does not feed containers unless the tester is running at least this speed. This parameter can be used to replace the clutch release detect that previously told some controllers the tester wheel is rotating. Enter 0 to disable.	0
Tester Station Count*	Number of pockets on the tester.	48
External Home Sensor	Typically an inductive prox mounted on the test wheel which gives the system one pulse per revolution of the wheel. This parameter also allows you to specify a NO/NC sensor input.	ENABLED N.O.
Timing Generator Count Per Rev Tolerance	Specifies the allowed difference between the actual and expected timing pulses for each revolution of the test wheel. This will verify that the encoder is working properly. Going over this number would create a timing fault. Note: a value of 10 would equal 10% of the pocket distance.	10

Timing Generator Direction	Rotational direction of the TE20x timing generator as viewed from the cover.	Counter-Clockwise

FEED SUPPLY

Feed Supply*	Enables the use of a Feed Supply sensor. This sensor is typically in the overhead conveyor to the tester and verifies that there is a sufficient supply of containers to start feeding into the tester. This parameter also allows you to specify a NO/NC sensor input.	ENABLED N.O.
Feed ON Delay	Feed Control delay in seconds after continuous container detection by the Feed Supply sensor. If containers are in the tester (Machine Clear output off), the Feed Control will allow containers to be fed immediately. When no containers are in the tester (Machine Clear output on), the tester waits this number of seconds before turning off the Machine Clear output and initiating the Speed On delay to start feeding containers. Valid values are from 0 to 999 seconds. 0 disables this parameter.	3
Feed OFF Delay	Feed Control delay-off in seconds after container outage at the Feed Supply sensor. If containers are not continuously detected at the Feed Supply sensor for this many seconds, the Feed Control output is turned on. Valid values are from 0 to 999 seconds. 0 disables this parameter.	3
Speed ON Delay	Allows the tester to reach full speed prior to containers being fed into tester. This is the number of seconds after turning off the Machine Clear output before turning on the Feed Control output. Valid values are from 0 to 999 seconds. 0 disables this parameter.	0
Speed OFF Delay	Machine Clear output delay-on after the last can clears the reject position. This allows the tester to continue to run at full speed until all cans have left the tester. Valid values are from 0 to 999 seconds. 0 disables this parameter.	0

FEED CONTROL

Feed Control*	Defines if the MD30 controls the Feed Control (Can Stop) mechanism. This is recommended to be ENABLED so the system can use other features including delays and jam detection. This parameter also allows you to specify a NO/NC sensor output.	ENABLED N.O.
Feed Control Response	Amount of time it takes for the Feed Control mechanism to release a container. Typical value is 35mS. The MD30 advances the timing of this output based on the speed of the tester to maintain accurate positioning. Valid values are from 0 to 99mS	35ms
Feed Control Position	Pocket number and fractional timing position of the Feed Control mechanism when the Tester is at the Home Location (reset sensor being triggered by the reset flag).	21.87
Feed Control Fault Stations Delay	Detects a jam in the infeed to the tester, or a bad container present sensor. When the Feed Control is opened, and a container is fed into the machine, that container should be sensed at the Container Present sensor within this set number of pockets. When the Feed Bypass switch is actuated, this parameter is ignored. Set to 0 to disable.	0
Machine Clear Parameter	Determines the output state of the Machine Clear output. The machine clear output will turn on when there are no containers present in the tester. This is typically wired into the motor drive to go into an idle speed.	N.O.

CONTAINER PRESENT

Container Present Sensor Off Required	Detects a jam in front of the Container Present sensor. In most cases as containers are being fed, the Container Present sensor should be turning on and off for each container. If there is a jam and a container is stuck in front of the container present sensor for one pocket length, the system will treat this as a jam.	YES
Container Present Sensor Position	Pocket number and fractional timing position of the Container Present Sensor when the Tester is at the Home Location (reset sensor being triggered by the reset flag).	21.30
Container Present Sensor Enable*	This parameter is required to be enabled so that the system can track No Container / No Air, Total Tested, and Machine Clear. This parameter also allows you to specify a NO/NC sensor input.	ENABLED N.O.

AIR SPOOL

Air Spool Position at Home	Pocket number and fractional timing position of the Air Spool Actuator when the Tester is at the Home Location (reset sensor being triggered by the reset flag) for Testers with Charging Spool Valves. For Flat Valve Testers, this is set as the pocket number and fractional timing position of the first closed pocket when the tester is at the Home Location.	14.70
Charging Spool Valve*	Defines if the MD30 controls the Air Spool Valve. This is a required to be enabled for both testers with Charging Spool, and Flat Valves. For Flat Valve testers, the MD30 holds air to the whole tester while containers are being tested. This parameter also allows you to specify an NO/NC output.	ENABLED N.O.
Air Hold On Count	The number of pockets that the MD30 keeps the Air Spool Actuator turned on. For testers with Charging Spool Valves, this should be set to 1. For Flat Valve Testers, this value equals the number of pockets from where the pocket closes, and the air test block.	1
Air Spool Response	The typical time for the Air Spool Actuator solenoid to react. This is based on the particular solenoid used, and the air pressure. Should be specified in the solenoid manual. Typical value is 30mS	30mS
Air Spool Switch Air ON Fault Time	If the Air Spool Actuator solenoid is not functioning correctly, there could be an uncharged pocket at the beginning of a run. This parameter defines the maximum amount of time allowed for the Air Spool Actuator to respond before creating a fault. A value of 0 disables this fault.	80mS
Air Spool Switch Air OFF Fault Time	If the Air Spool Actuator solenoid is not functioning correctly, an empty pocket after the end of a run may inadvertently be charged with air. This parameter defines the maximum amount of time allowed for the Air Spool Actuator to disengage before creating a fault. A value of 0 disables this fault.	0mS
Air Spool Switch Sensor*	This is required if you are using an Air Spool Actuator for No Container / No Air. The Air Spool Switch verifies that the Air Spool Actuator is in the charging position. The switch is also used to time the On and Off times for the Air Spool Actuator solenoid, and if there is a stuck air spool on the wheel. This parameter also allows you to specify a NO/NC switch.	ENABLED N.O.

Supply and Air Test Transducers

Test Transducer Type*	The type of TD10 transducer used for the Test Air on the test block of the tester. This is typically set to TD10-015-2 unless the tester is for Aerosol (TD10-045-5)	TD10-015-2

Enable 2nd Test Transducer*	This parameter is ENABLED if Even and Odd transducers are being used on the tester.	ENABLED
Supply Transducer Type*	The type of TD10 transducer used to measure the supply air coming into the tester. This is either a TD10-045-15 for food can, or TD10-225-105 for aerosol.	TD10-045-15
Enable Supply 1 Transducer*	This parameter in ENABLED if there is a TD10 monitoring the incoming Supply Pressure to the tester.	DISABLED
Enable Supply 2 Transducer*	For some Flat Valve testers, there are two regulators which supply air to the pockets. One for charging and one for hold. This parameter is DISABLED for testers with No Container / No Air.	DISABLED
Supply Pressure Min Limit	The MD30 monitors the supply pressure going into the tester. If this pressure drops below the specified level, the tester will stop infeed, and reject the containers that were not tested at the proper level. This parameter is ignored if the Supply 1 Transducer parameter is DISABLED.	8.0 PSI

AIR TEST

Reject Limit	The maximum allowed pressure measured in a pocket before being rejected. Chapter 7 offers a detailed explanation of determining this value.	0.000 PSI
Gross Reject Limit	Container test pressure values above this value are considered Gross Rejects in the reject counts. Chapter 7 offers a detailed explanation of determining this value.	0.000 PSI
Air Test Position	Pocket number and fractional timing position of the Air Test port when the Tester is at the Home Location (reset sensor being triggered by the reset flag).	28.12
Air Pulse Timing Minimum Peak Limit	Value used in the setup of the Air Test timing. Pressure values above this limit will be used in determining the position of the Air Test port on the test block.	0.000 PSI
Station Minimum Air Fault Limit	Minimum pressure allowed in a pocket with a container. This parameter is used to detect problems with an individual pocket. If a pressure value below this limit is measured, the tester will clear out and reject affected containers. Causes for this problem could be cut air lines to the pocket, reversed spool valve, or bad pocket seal.	0.00 PSI
Station Good Seal Percent Limit	If the average pressure reading from a station varies significantly from the average pressure reading of all stations - this signifies the seal is deteriorating. The specified percentage is for the tolerated variance from average before causing the warning. The tester is not stopped for a bad seal warning. A value of 0 disables this warning.	200 %
Samples in Average for Seal Check	Number of samples to use for the Station Good Seal Percent Limit in 16 revolution increments. A value of 1 specifies 16 revolutions for the average.	1
Tester Reject Ratio	Keeps the tester from operating if there are too many cans rejected. For example, if a value of 20/1000 is specified, and there are 20 rejects within the last 1,000 containers tested, the tester will shut down and give a Tester Reject Fault. A value of 0 in the numerator disables this parameter.	0/1
Station Reject Ratio	Keeps the tester from operating if there is a bad pocket rejecting too many containers. This typically catches a bad seal or protrusion problem which makes the test values in the pocket high enough to consistently reject. For example, if a value of 3/10 is specified, and there are 3 rejects for any individual pocket for the last 10 revolutions of the test wheel, the tester will shut down and give a Station Reject Fault. A value of 0 in the numerator disables this parameter.	0/1

REJECTOR

Reject Mode*	This parameter can be toggled between FULL and SLOT. Specifying FULL (recommended) allows the rejector to stay on between consecutive rejects. Specifying SLOT allows the rejector to turn off between rejects.	FULL
Dual Rejector*	ENABLED if the tester has two reject channels (even and odd). This parameter is DISABLED for single rejector testers.	ENABLE N.O.
Reject Position	Pocket number and fractional timing position of the Rejector solenoid when the Tester is at the Home Location (reset sensor being triggered by the reset flag).	22.50
Rejector Response	The typical time for the rejector solenoids to react. This is based on the particular solenoid, and the air pressure used. Should be specified in the solenoid manual. Typical value is 40mS	40mS
Reject Pulse Length Percent	Sets the ON duration of the reject signal as a percentage of the distance between stations for that rejector (00-99%). 00 disable the reject pulse length, and allows the rejector to change states only when the station is at the rejector device. If a single rejector is used, the cycle is the distance between adjacent stations. If using dual rejectors, the cycle is twice the distance between adjacent stations. If < 1 or > 99 then this parameter is disabled.	100%
Reject On Reset*	When the MD30 is restarted after a power down, it is not able to tell what pockets have cans, and if there may be a possible reject in the tester. With this parameter ENABLED, the MD30 will turn on the rejector for one full revolution of the test wheel to be sure that no cans are present in the wheel, and to keep potential leakers from being shipped.	DISABLE
Reject Verify Sensor*	The Reject Verify Sensor is a proximity sensor used to confirm that a rejected container was rejected and passed out the reject chute. This parameter allows you to ENABLE the use of this sensor input. This parameter also allows you to specify a NO/NC sensor input.	ENABLE N.O.
Reject Verify Stations Delay	The number of stations after the reject solenoid fires that the rejected container should show up at the reject verify sensor. To set this parameter, count the number of positions on the starwheel from where the reject solenoid is located, through the secondary starwheel and then positions in the reject chute. Once this value is determined, add a couple pockets to this number to compensate for speed changes in the reject chute.	0
Unexpected Rejects	Checks that the rejector is not sticking, and sending additional containers out the reject chute. If this parameter is enabled, the tester will stop any time there is a container detected by the reject verify sensor that was not flagged to be a reject.	ENABLE
Reject Air Sensor*	Optional sensor input to verify that the rejector solenoid is actuating properly. Not currently implemented.	DISABLE

REMOTE INDICATOR SETUP

Warning Light	Warning Remote Output - Enables the Warning Light output to come on when the tester is clearing after an Alarm condition. This parameter also allows you to specify a NO/NC output.	1 N.O.

Caution Light	Caution Remote Output – Enables the Caution Light output to come on when any station has a bad seal warning. This parameter also allows you to specify a NO/NC output.	1 N.O.
AUX Light	AUX Remote Output – Enables the AUX Light output to come on when the tester has lost communications from the HMI for 20 seconds. This parameter also allows you to specify a NO/NC output.	1 N.O.

REMOTE SWITCH SETUP

Aux 1 Input Switch	For future expansion	DISABLED N.O.
Aux 2 Input Switch	For future expansion	DISABLED N.O.
Container Test/Aux 3 Input Switch	The Container Test switch allows you to run a full batch of calibrated leakers without causing a Tester Reject Fault. When this switch is turned on, the system will not enable warnings if there are a high number of rejects in the tester, or if there are many rejects per pocket, so it is important to turn this switch off. The switch is located on the Running Screen, or can be an external toggle switch. This parameter also allows you to specify a NO/NC switch input.	DISABLED N.O.
Reject Test Switch	Used to turn on the rejector to reject containers manually. The momentary button is located on the Running Screen, or can be an external momentary pushbutton. This parameter also allows you to specify a NO/NC pushbutton input.	DISABLED N.O.
Feed Stop Switch	The Feed Stop Switch is used to allow containers to be fed into the tester. This external toggle switch is typically labeled STOP and FEED. When actuated, the switch sends a signal to the MD30 to open the can stop and allow cans to be fed. This parameter also allows you to specify a NO/NC switch input.	ENABLED N.O.
Fault Reset Switch	When an error occurs, the Fault Reset switch is used to clear the error out. This switch is a momentary pushbutton, but can also be reset on the Running Screen, and a pop up window on the MI100 touchscreen. This parameter also allows you to specify a NO/NC pushbutton input.	ENABLED N.O.
Feed Bypass Switch	When the Feed Stop switch is in the STOP position, cans are manually fed using the Feed Bypass Switch or through the Running Screen on the MI100 touchscreen. They can also be fed if there are not enough cans to reach the Feed Supply sensor. This input is a momentary pushbutton This parameter also allows you to specify a NO/NC switch input.	DISABLED N.O.
Access Switch	Used as a remote method of activating security password in the TestAlert system. Some menus are password protected using a security key. This input allows you to have an external key switch or other device to lock the menus.	DISABLED
Low Pressure Switch	External toggle switch used to put the tester into low pressure mode. This switch is labeled OFF and ON. When turned to the ON position, the tester will clear out of all cans and go into the low pressure setup procedure. This parameter also allows you to specify a NO/NC switch input.	ENABLED N.O.

Low Pressure Test

Low Pressure Check Mode	This parameter can be set as PRESSURE or TIMED. -Pressure – when going into low pressure mode, the MD30 monitors the Supply pressure to make sure it has gone down to a set level. After that point the system will proceed with the low pressure test. A supply pressure TD10 transducer is required for this setting. -Timed – the MD30 uses a series of preset time delay parameters before going into low pressure test. Pressure Mode is recommended to ensure that there is no harmful pressure present to damage the TD10 transducers, but can lead to longer decay times if the tester is sealed well.	PRESSURE
Bleed Delay in Seconds	Seconds to delay after turning off the Test Air output before the Low Pressure output is turned on. This allows the supply pressure to bleed down before opening the low pressure valve that connects the supply to the low pressure gauge.	15
Start Delay in Seconds	Seconds after the Low Pressure output is turned on before turning on the Air Spool output. This allows the low pressure to build up in the system before charging pockets.	3
Stop Delay in Seconds	Timed Low Pressure Check Mode - The number of seconds after the Low Pressure switch turned off before resuming testing. Pressure Based Low Pressure Check Mode – Number of seconds after the supply pressure rises above the TEST SUPPLY PRESSURE value before resuming normal testing.	3
Low Pressure Supply Pressure Max Limit	Used for setting the pressure limit for Pressure Based Low Pressure mode. When going into low pressure mode, the supply pressure must go below this set value before pockets will be charged.	1.0 PSI
Use Air Spool to Bleed Test Air	Defines if the Air Spool Actuator is turned on as soon as the Low Pressure Switch is actuated. This allows the Test Pressure in the tester to vent quickly. Standard delays are still used.	DISABLED

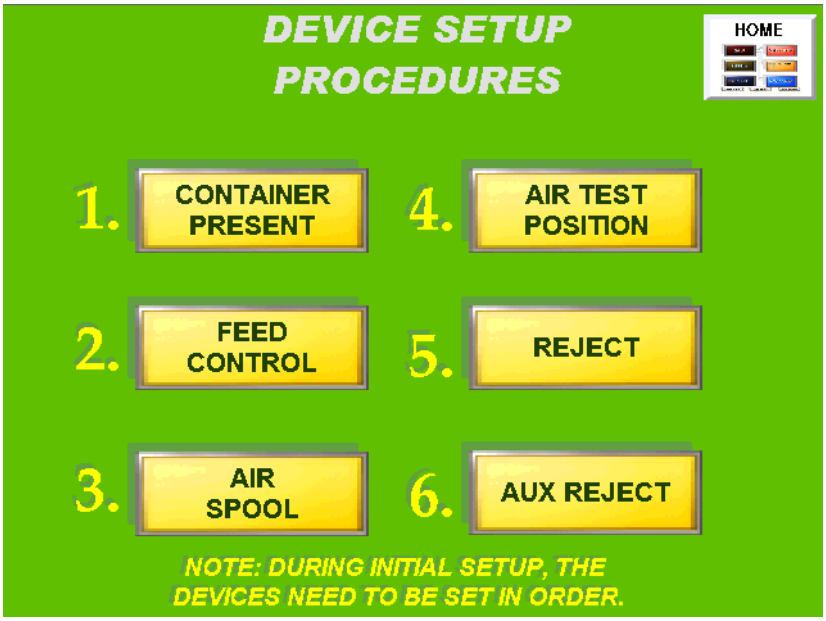
JAM SETUP

Reject Verify Jam Delay	If the Reject Verify sensor is continuously on for this number of milliseconds, the MD30 controller stops the tester and sends the "Jam Detected Fault – Reject Verify" to the HMI. Set to 0 to disable.	300mS
Jam 1 Detect Delay	Jam 1 input to the MD30. The number of milliseconds the Jam1 input must be on to indicate a jam condition. If a jam is detected, this input will trigger the MD30 to immediately shut down the tester and warn the operator of a “Jam Detected Fault” in location 1. Set to 0 to disable.	200mS
Jam 2 Detect Delay	Jam 2 input to the MD30. The number of milliseconds the Jam 2 input must be on to indicate a jam condition. If a jam is detected, this input will trigger the MD30 to immediately shut down the tester and warn the operator of a “Jam Detected Fault” in location 2. Set to 0 to disable.	200mS
Jam 1	This parameter also allows you to specify a NO/NC switch input.	N.O.
Jam 2	This parameter also allows you to specify a NO/NC switch input.	N.O.

**Parameters with a * require the tester to shut down to make a change.

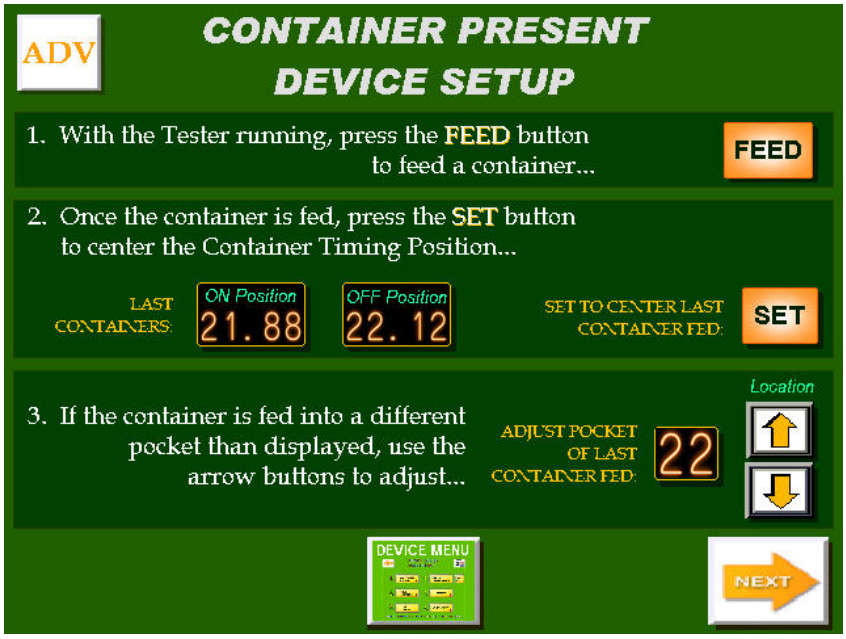
Device Setup Procedures

The Device Setup Procedure allows you to set up the main devices on the tester. It guides you through setup of the Container Present sensor, Feed Control mechanism, Air Spool actuator, Air Test position, Reject mechanism, and an Auxiliary Reject. This area is typically only visited once to initially set up a tester, and then only when devices are changed or problems arise. The individual setups need to be performed in order when initially setting up a tester. When going to this area from the HOME screen, the tester will go through a procedure to stop testing, clear cans out of the tester and then go into low pressure mode to protect the transducers. The low pressure needle valve also needs to be set to 10"H_2O before continuing. This process is almost identical to the process described in Chapter 6 Low Pressure Check



1) Container Present Device Setup

The container present sensor is set up first since it identifies which pocket a can goes into once it is fed into the tester. To start this procedure, make sure the tester is running and cans are available. Press the FEED button located under step 1. This will feed one container into the tester. Note which pocket the can was fed into. For step 2, the display shows the points on the tester where the sensor starts sensing (ON Position) and stops sensing (OFF Position) the container passing by. Press the SET button to center these values on the pocket. In step 3, verify that the pocket number displayed is the same number that the container went into. If not, use the up and down arrows to adjust the displayed number and verify by feeding another container. Press the NEXT button to continue.

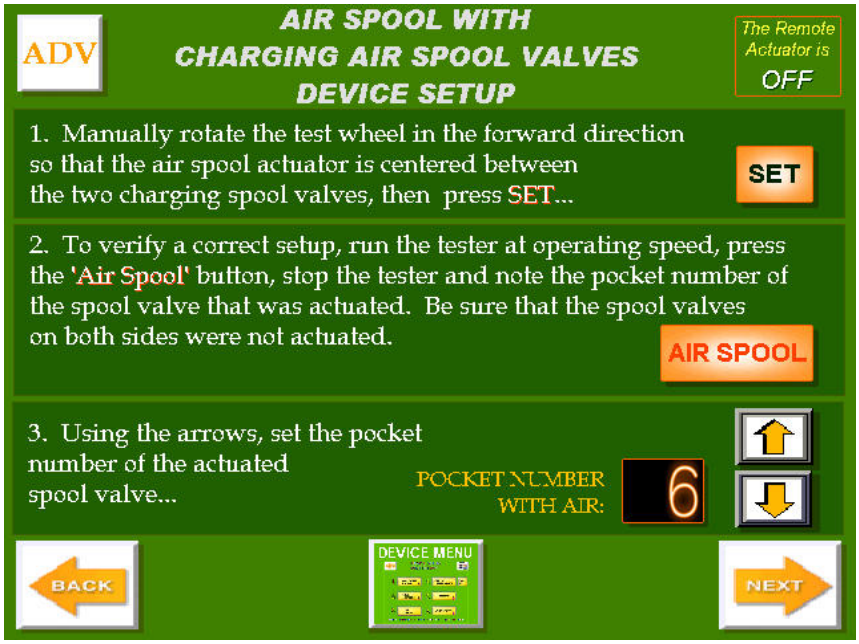

ADV
CONTAINER PRESENT DEVICE SETUP
1. With the Tester running, press the FEED button to feed a container...
FEED
2. Once the container is fed, press the SET button to center the Container Timing Position...
LAST CONTAINERS:
ON Position
21.88
OFF Position
22.12
SET TO CENTER LAST CONTAINER FED:
SET
3. If the container is fed into a different pocket than displayed, use the arrow buttons to adjust...
ADJUST POCKET OF LAST CONTAINER FED:
22
Location
DEVICE MENU
NEXT

2) Feed Control Device Setup

ADV
FEED CONTROL
DEVICE SETUP
1. Manually rotate the test wheel until the Tester is at a point where the Feed Control (Can Stop) needs to open...
SET
2. Verify Device - Run Tester, Press the 'FEED' button, Make sure one container is fed and goes into the correct pocket...
With the Tester running, press the FEED button:
FEED
Pocket of Container Present
21
3. If the container is fed into a different pocket than displayed, use the arrow buttons to adjust...
Location
Pocket Fed
21
BACK
DEVICE MENU
NEXT

This window sets up the Feed Control mechanism, or Can Stop. This setup is necessary when a worm (screw) feed is not used on the infeed of the tester. For Step 1, you must turn the tester by hand in the forward direction only to the position where the Feed Control mechanism needs to turn on, and press the SET button. Step 2 asks you to run the tester at normal speed and then press the FEED button. This should feed one container. Make note which pocket the can goes into. In Step 3, verify that the fed container pocket number matches the pocket displayed. If not, use the arrows to adjust the pocket number. It is recommended after making an adjustment, to press FEED again to verify your settings.

3a) Air Spool Device Setup (Testers with Charging Spool Valves)


ADV
AIR SPOOL WITH
CHARGING AIR SPOOL VALVES
DEVICE SETUP
The Remote Actuator is
OFF
1. Manually rotate the test wheel in the forward direction so that the air spool actuator is centered between the two charging spool valves, then press SET...
SET
2. To verify a correct setup, run the tester at operating speed, press the 'Air Spool' button, stop the tester and note the pocket number of the spool valve that was actuated. Be sure that the spool valves on both sides were not actuated.
AIR SPOOL
3. Using the arrows, set the pocket number of the actuated spool valve...
POCKET NUMBER WITH AIR:
6
BACK
DEVICE MENU
NEXT

When the Air Spool Actuator is actuated, it should be positioned midway between the air spool valves to allow for some error in the solenoid. For Step 1 of the setup, you must turn the wheel by hand so that the air spool actuator wheel is centered between two spool valves. Press the SET button to accept this position. Next for Step 2, run the tester at operating speed and then press AIR SPOOL to charge a single pocket. Stop the tester, verify only one pocket was charged and note the pocket number of the charged valve. Be sure that the charged pocket number matches the pocket displayed in Step 3. It is recommended after making an adjustment, to press AIR SPOOL again to verify your settings.

3b) Air Spool Device Setup (Testers without Charging Spool Valves)

ADV
AIR SPOOL WITHOUT CHARGING AIR SPOOL VALVES DEVICE SETUP
The Remote Actuator is OFF
1. Manually rotate the test wheel in the forward direction to a point where a pocket is fully closed, then press SET...
SET
2. Using the arrows, set the number of the pocket after the Air Spool Actuator...
POCKET NUMBER:
6
BACK
DEVICE MENU
NEXT

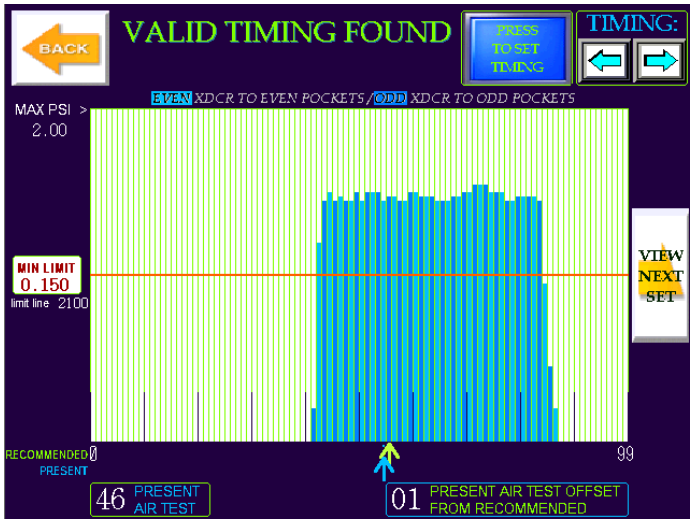
For older Flat Valve style testers that are not upgraded to individual spool valves, the charging air is applied to a whole section of the tester at one time. To save wear and tear on the tester, the TestAlert system allows the air to be turned on only when containers are being tested. For Step 1, manually rotate the tester in the forward direction to a point where a pocket has just closed, and press the SET button. Next, using the arrow buttons, enter in the pocket number of the pocket that just closed. In most cases there would be two pockets that close at the same time, use the lower of the two numbers.

For this setup, be sure that the Test Air and Air Spool relays are wired in series, and that the parameter AIR HOLD ON COUNT is set to the number of pockets between the closed pocket and the Air Test Block.

1) Air Test Position Setup

The precise position of the air test port on the test wheel is critical to getting the optimum sensitivity out of the tester. To start this process, press the START AIR TEST TIMING button. This will take you to a bar graph display showing the timing positions of the air test block and what it looks like as the air test port passes by the air test block.

To view this Timing Graph after the setup is complete, or to make adjustments to the current timing, press the VIEW CURRENT AIR TEST TIMING button.

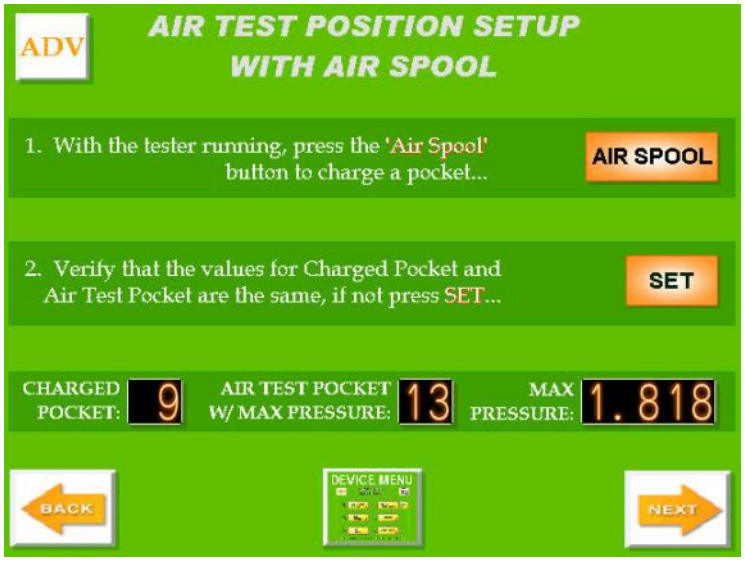


After the valid timing has been found, you will see the bars come up on the screen. After the process is completed, a blue and green arrow shows up on the bottom of the screen. The blue arrow shows the current position of the Air Test Timing, while the green arrow shows the recommended timing position. To accept the recommended setting, press the button PRESS TO SET TIMING at the top of the screen. If an adjustment to the current timing is desired, press either the left or right arrow to adjust. Sometimes, depending on the tester, the bar graph display will spread over to a second screen. To view this, press VIEW NEXT SET. If no values appear after a few rotations of the test wheel, verify that there is Low Pressure air available and that the Air Pulse Timing Minimum Peak Limit value in the parameter section is set below the low pressure going into the tester. Air Pulse Timing Minimum Peak Limit is only used for this setup and can be found under the Parameters Setup button on the Home screen and then under Air Test.

When the timing is set, press the Back button and then the NEXT button to go to the next step. Depending on the type of tester being set up, you will be taken to one of two screens:

- Air Test Position Setup with Air Spool – This setup is used when there is a charging Air Spool Actuator set up on the tester.
- Air Test Position Setup with No Air Spool - This setup is used for older Flat Valve style testers with no conversion package. With these testers there is no capability of charging an individual pocket.

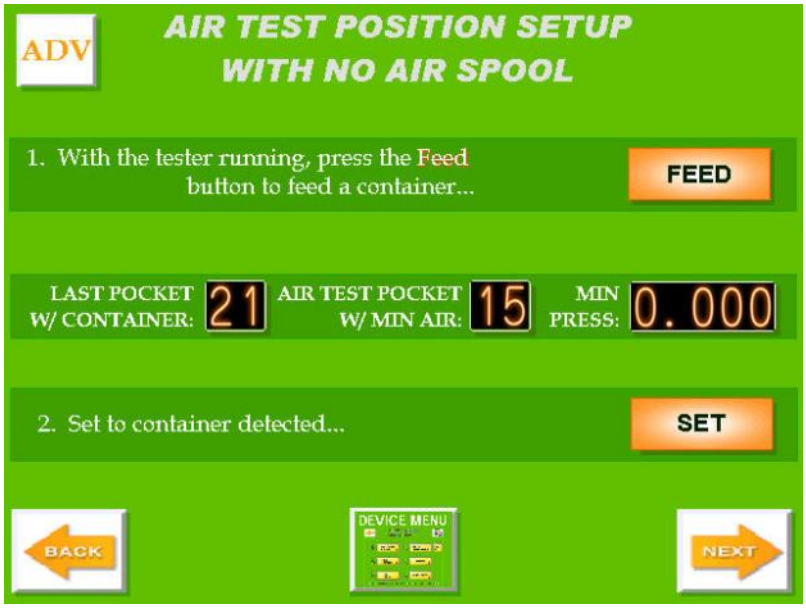
4a) Air Test Position Setup with Air Spool


ADV
AIR TEST POSITION SETUP WITH AIR SPOOL
1. With the tester running, press the 'Air Spool' button to charge a pocket...
AIR SPOOL
2. Verify that the values for Charged Pocket and Air Test Pocket are the same, if not press SET...
SET
CHARGED POCKET: 9
AIR TEST POCKET W/ MAX PRESSURE: 13
MAX PRESSURE: 1.818
BACK
DEVICE MENU
NEXT

In this method, the Air Spool Actuator should have already been correctly set up so that we know that a particular pocket has been charged.

In Step 1, press AIR SPOOL to charge one pocket with air. For Step 2, if the values for Charged Pocket and Air Test Pocket w/Max Pressure are different, press the SET button to accept this pocket change. It would be beneficial to perform this procedure at least a couple times to verify that the correct pocket is being set, and that there are no leaking spool valves causing problems.

4b) Air Test Position Setup with No Air Spool



For flat valve testers without the capability of charging individual pockets, the system feeds a container to measure a drop in pressure to determine the Air Test Position.

In Step 1, press the FEED button to feed a container into the tester. When the container passes by the container present sensor, the Last Pocket w/Container value is updated with this pocket. Once the pocket with a container passes by the Air Test block, the Air Test Pocket w/Min Air value is updated along with its pressure. For Step 2, if the values for Last Pocket w/Container and Air Test Pocket w/Min Air are different, press the SET button to accept this pocket change. It would be beneficial to perform this procedure at least a couple times to verify that the correct pocket is being set, and that there are no leaking spool valves causing problems.

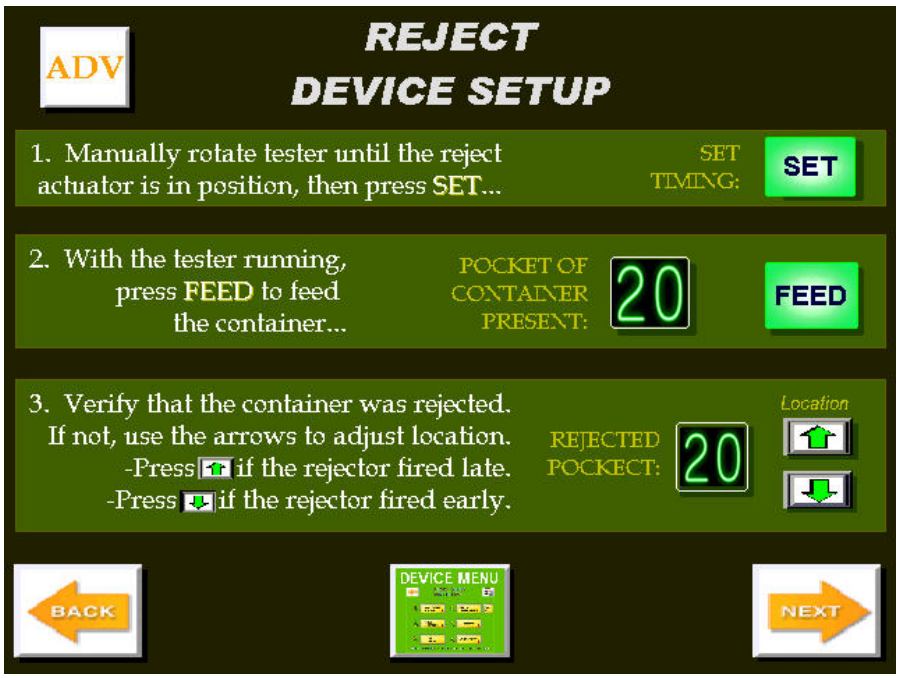
**Note: For both the above screens, values may not display correctly if the transducers are swapped between odd and even. Verify the wiring of the transducers.

2) Reject Device Setup

There are many different types of rejector mechanisms in use on testers. We will discuss the main two for setting up with the TestAlert system: Dual Wheel Discharge, and Positive Discharge.

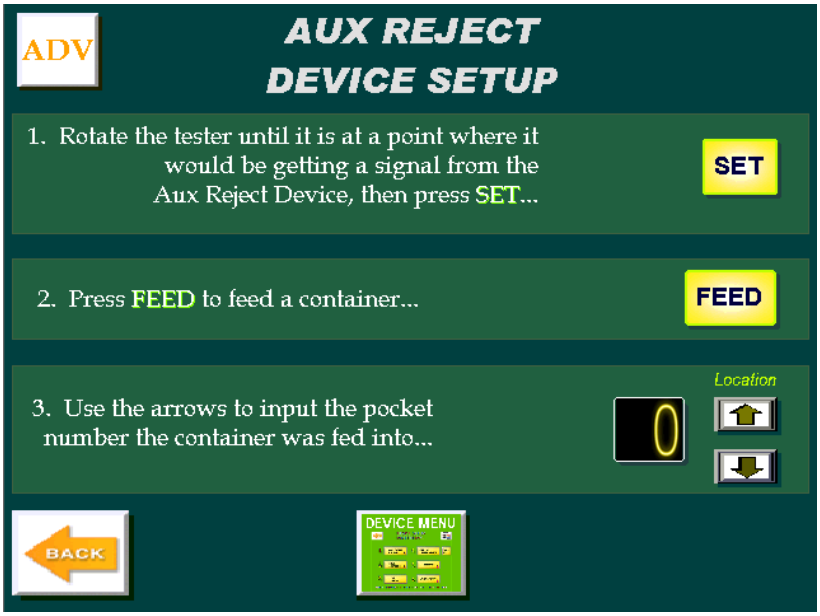
The Dual Wheel Discharge rejector (shown on the right) uses pins on a flat paddle, or shoe to pick the reject up off the starwheel and out the reject chute. The paddles are typically set up as odd and even on opposite sides of the reject chute. The reject solenoid pushes the paddle in, which extend the pins underneath the rejected container. The correct position for the solenoid to be actuated is midway between the paddles.

The Positive Discharge rejector uses a reject cam to push the can off of a magnetic carrier wheel. When the cam is extended, it should just miss the previous roller by 1/4 - 3/8". This is the correct position for this type of rejector.



In Step 1, manually rotate the tester by hand in the forward direction until the rejector is in the correct position to turn on. This position is described above. If you have a different style of rejector, consult the tester manual for the correct positioning. Next, run the tester at speed and press the FEED button under Step 2 to feed a container. When the container is getting ready to come out of the pocket, jog the tester to be able to determine when the rejector fires. In Step 3, see if the rejector fires early or late. Press the appropriate arrow buttons to adjust the location. After making an adjustment, run the tester and press the FEED button another time to verify the parameter is set correctly.

6) AUX Reject Device Setup


ADV
AUX REJECT
DEVICE SETUP
1. Rotate the tester until it is at a point where it would be getting a signal from the Aux Reject Device, then press SET...
SET
2. Press FEED to feed a container...
FEED
3. Use the arrows to input the pocket number the container was fed into...
0
Location
BACK
DEVICE MENU

The Aux Reject is used as an additional reject input to the tester. This could be a vision system, or missing end detector.

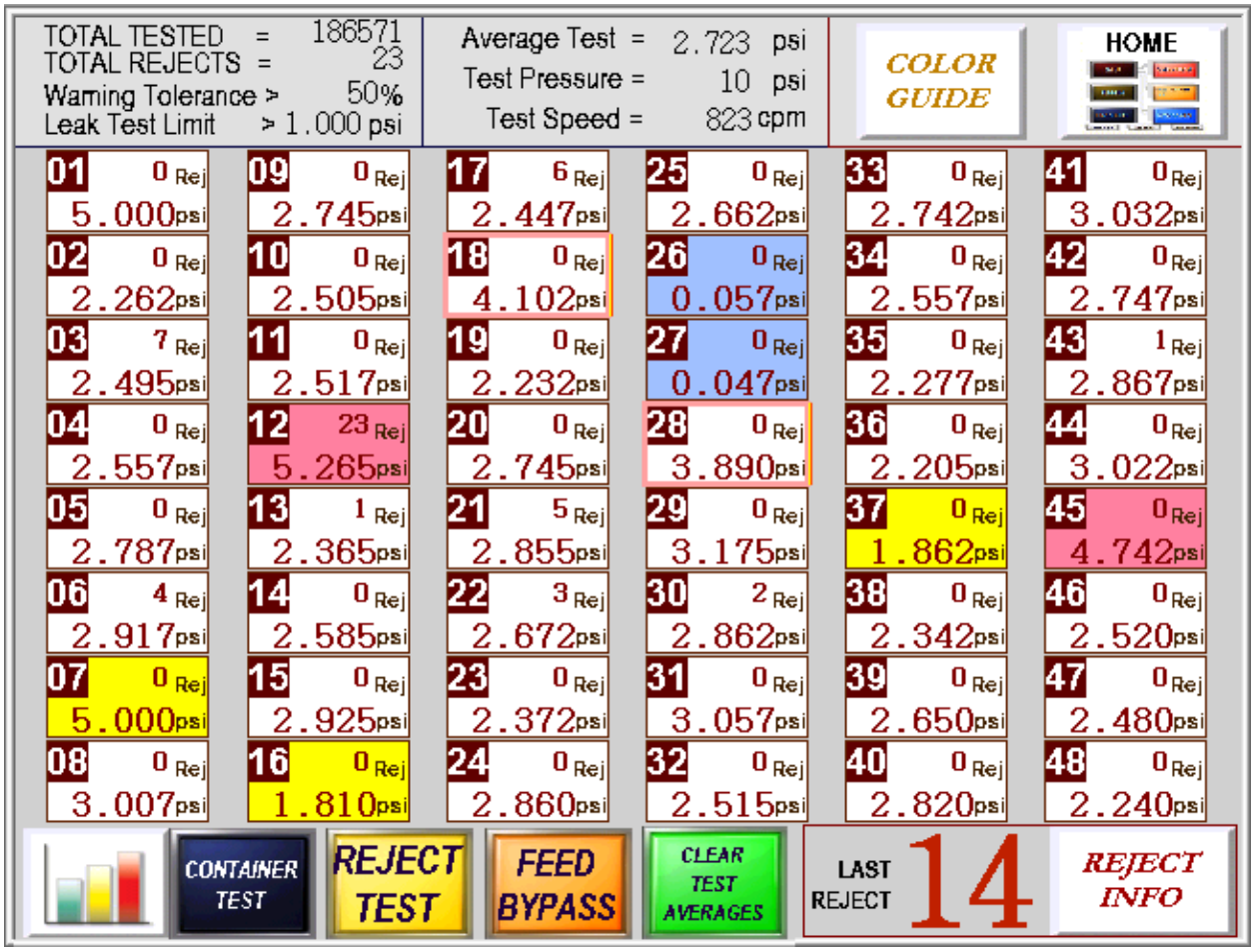
The container must be captured in order to accurately track the Aux Reject through the tester. When the MD30 receives an Aux Reject signal, that pocket is not charged, and is flagged to be rejected at the rejector.

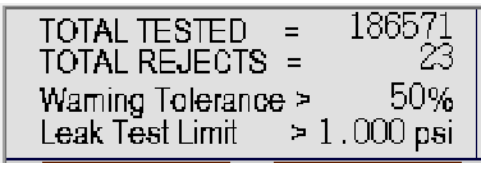
For setup of the Aux Reject, in Step 1, rotate the tester in the forward direction until the container is in place for getting a signal from the Aux Reject device. Press the SET button. In Step 2, press the FEED button to feed a container. Use the arrows in Step 3 to adjust the Location of the Aux reject.

Running Screens

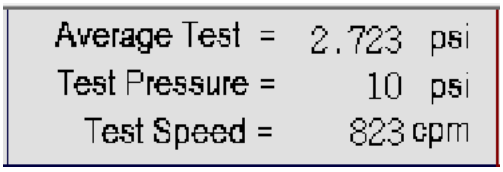
Main Running Screen

This is the main screen that would typically be viewed while the tester is in operation. From the view below, you can view the status of every pocket on the air tester, along with running and reject parameters. You also have access to operational buttons and Reject Information. All of these sections will be described in detail below.

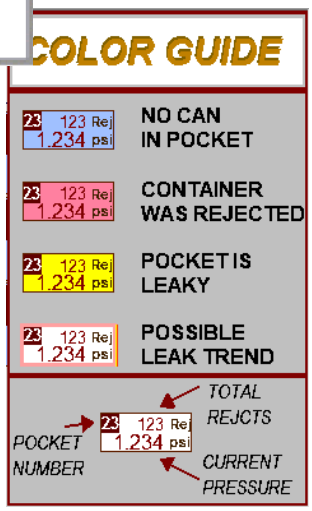




- Total Tested – Total cans tested by the tester
- Total Rejects – The total number of cans rejected.
- Warning Tolerance – Percentage of tolerance before giving a warning that there is a bad pocket seal. The average used is the average pressure value for all pockets with a good can.
- Leak Test Limit – Any pressure values above this limit will be considered a reject.



- Average Test – Average pressure value for all pockets with a good can
- Test Pressure – Current Supply Test pressure
- Test Speed – Tester speed in Containers Per Minute



The Color Guide button brings up a menu to show what the different colors on the display means.

- If the pocket is shaded blue, there is no can in that pocket
- If the pocket is shaded red, that can was identified as a leaker and was rejected.
- The yellow shading indicates that the pocket did not have enough pressure in it for a valid test. This can indicate a bad spool valve, pocket seal, or cut air line to the pocket. This is considered a fatal
- If the pocket has a red box around it, this indicates a Bad Seal (Leak Trend). This pocket is out of tolerance from all of the other pockets on the tester.

The individual pocket display shows the pocket number, number of rejects for this pocket, and the latest test pressure.

If you touch on an individual pocket, this brings up a pop up window which details more information about this pocket.

This button brings up the bar graph display screen showing the pressure values for all pockets on an easy to view display. The bar graph display will be detailed later.

The Container Test Button is a toggle button to allow the operator to run a batch of calibrated leakers without triggering faults in the MD30. Once this button is pressed, the system waits for the first reject to go through, and then re-enables the Tester Reject Fault and Station Reject Fault ratio parameters.

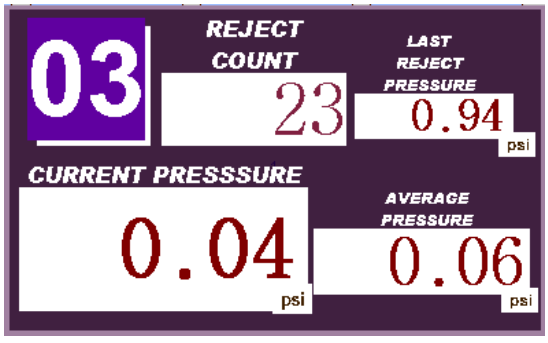
The Reject Test button is a momentary button that turns on the rejector to reject cans from the tester. Using this button does not trigger any of the fault messages that would normally occur with rejecting multiple containers. The containers are still tested correctly and leakers will be displayed on the screen.

The Feed Bypass button is a momentary button that duplicates the operation of the Feed Bypass on the main tester control panel. When this button is pressed, the Feed Control (Can Stop) allows cans to be fed into the tester.

The Clear Test Averages button sets the average pressure values for the tester to zero. This can be useful for determining that a pocket repair worked correctly.

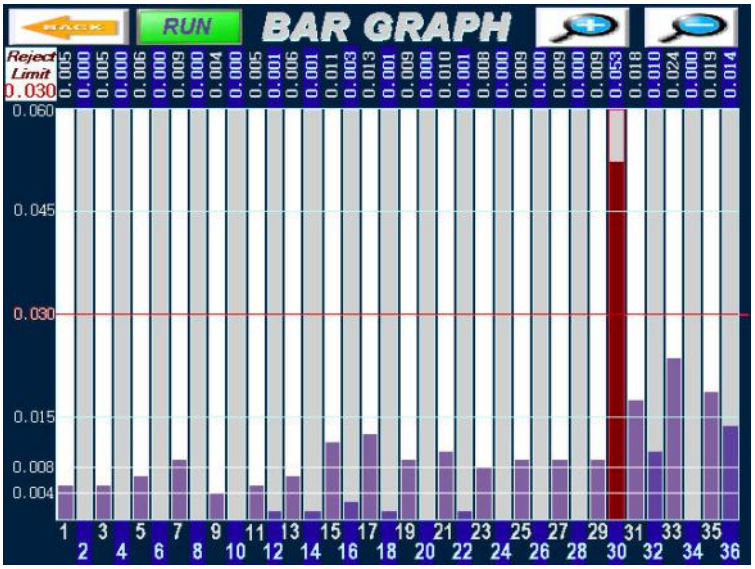
The Reject Info button brings up a screen that details all of the gathered reject information for the tester including the many different types of rejects tracked.

If you press the Last Reject number in this area, this brings up an MD2/MD3 simulator which only shows the pocket number of the last reject and its pressure.



Pressing on an individual pocket box will allow a window to pop up which gives more details about the pocket. These details include Reject Count, Last Reject Pressure, Current Pressure for the latest rotation, and the Average Pressure for this pocket. To clear this window, just press it again.

Bar Graph Display



The bar graph display is one of the best methods of comparing values coming from each of the pockets. The low pressure test is typically viewed on the bar graph display since it is easy and quick to tell if there is a problem with a pocket.

At the top of the display is a RUN/PAUSE button. If you ever want to keep the current screen on the display, press this button and the screen will freeze. The BACK button takes you back to the main running screen. The resolution of the bars will change depending on the type of TD10 transducer being used for test. The red line shows the reject limit for the tester. Any bar above this line is considered a reject. When running a low pressure check, all of the bars should be above the reject limit.

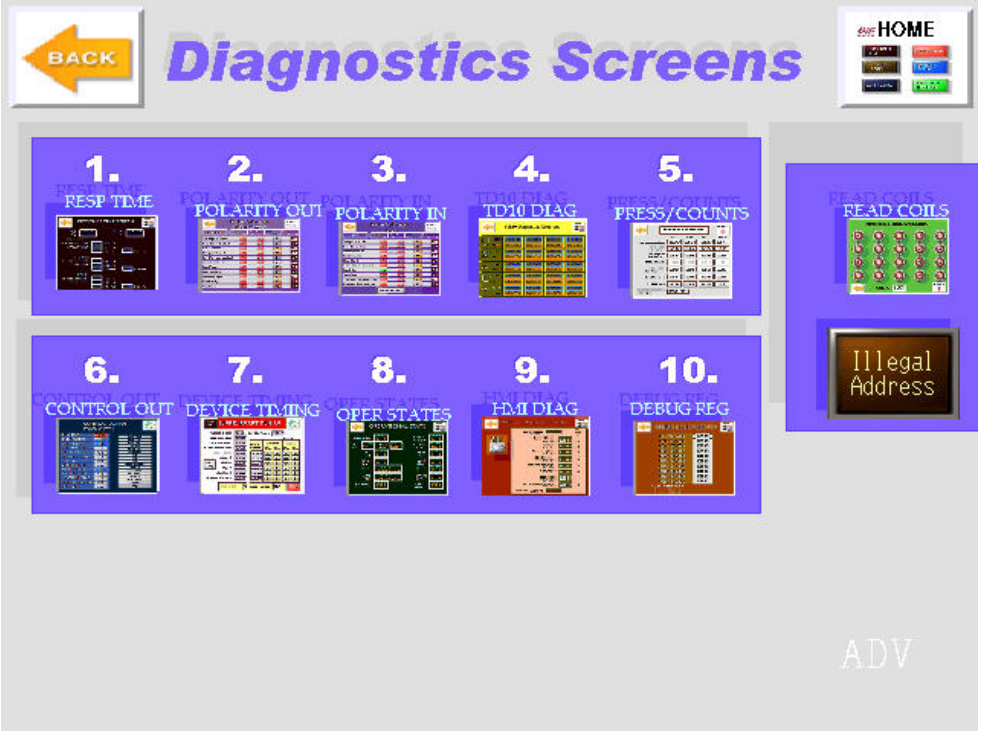
The bottom of the display shows the pocket number of the corresponding pocket. At the top of the bar graph is the pressure value associated with each pocket. Also at the top of the display, when there are no containers in a pocket, there is an icon displayed showing a can with a line through it to signify that no can is present.

At the top right of the display are zoom in and zoom out buttons. These allow you to change the display to view the pockets better. When zooming in or out, you will notice the reject limit moving up or down on the screen. Exiting out of this screen and returning will center the reject limit on the screen.

The Reject Limit is shown at the Top Left of the screen. If the operator needs to change the Reject Limit, press this box and a password entry window will appear. Once the password is entered, the operator can change the reject limit.

Diagnostic Screens

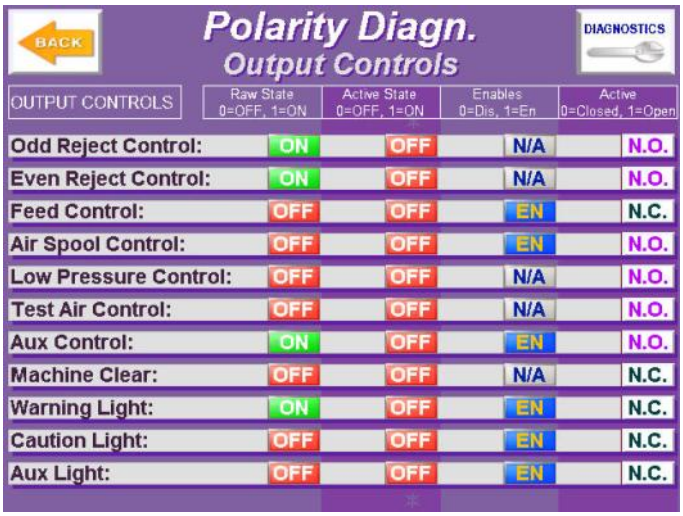
The diagnostic screens are used to get more detail about the setup and workings of the tester. These screens allow you a high level of access to the tester parameter settings. Care should be used when making any changes to these parameters. It is recommended that you save your current configuration prior to making changes in this area. A majority of these screens will be removed in future versions of the TestAlert system, so not all screens displayed are detailed in this manual.



The main diagnostic screens used are:

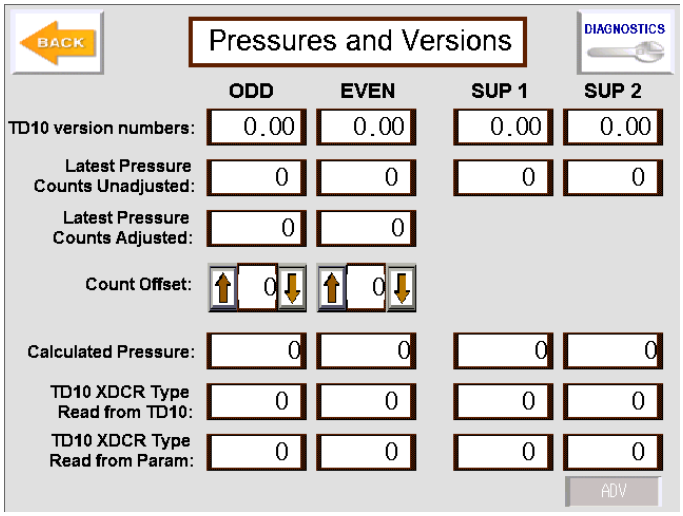
- Polarity
- Pressure and Versions (TD10)
- Control Output Diagnostics
- Device Timing
- Operational States

Polarity – Input and Output


BACK
Polarity Diagn.
Output Controls
DIAGNOSTICS
OUTPUT CONTROLS
Raw State 0=OFF, 1=ON
Active State 0=OFF, 1=ON
Enables 0=Dis, 1=En
Active 0=Closed, 1=Open
Odd Reject Control: ON OFF N/A N.O.
Even Reject Control: ON OFF N/A N.O.
Feed Control: OFF OFF EN N.C.
Air Spool Control: OFF OFF EN N.O.
Low Pressure Control: OFF OFF N/A N.O.
Test Air Control: OFF OFF N/A N.O.
Aux Control: ON OFF EN N.O.
Machine Clear: OFF OFF N/A N.C.
Warning Light: ON OFF EN N.C.
Caution Light: OFF OFF EN N.C.
Aux Light: OFF OFF EN N.C.

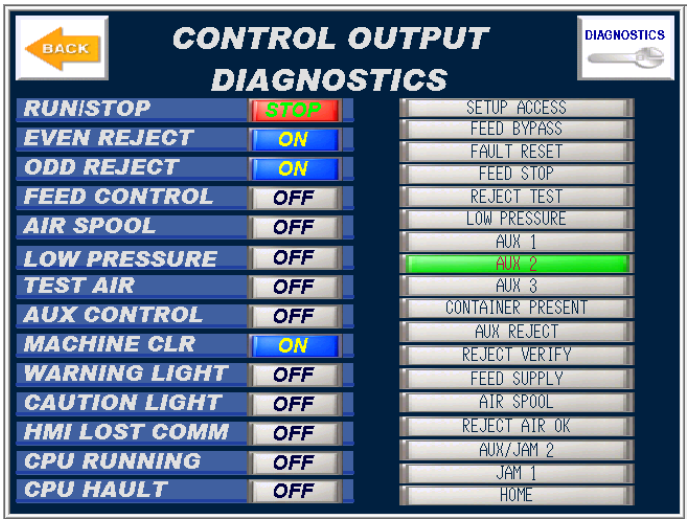
This diagnostic screen allows you to enable/disable every input and output of the MD30 along with setting the Normally Open (N.O.) and Normally Closed (N.C.) states for each. These parameters are listed separately in the Parameter Setup Screens, but they are shown grouped here for convenience.
To change any of the parameters, just touch the desired box and it will toggle.

Pressures and Versions


BACK
Pressures and Versions
DIAGNOSTICS
ODD EVEN SUP 1 SUP 2
TD10 version numbers: 0.00 0.00 0.00 0.00
Latest Pressure Counts Unadjusted: 0 0 0 0
Latest Pressure Counts Adjusted: 0 0
Count Offset: 0 0
Calculated Pressure: 0 0 0 0
TD10 XDCR Type Read from TD10: 0 0 0 0
TD10 XDCR Type Read from Param: 0 0 0 0
ADV

This screen shows the status of each of the 4 TD10 pressure transducers. They are labeled ODD, EVEN, SUP1(Supply1), and SUP2 (Supply2). The TD10 version numbers will be useful if you need to call for support on one of the transducers. Latest pressures are shown in raw counts from 100 to 4096. A value of 100 is equal to 0psi.
The Count Offset arrows allow you to compensate for differences in values shown between the even and odd channels. If one of the readings is shown to be above 100 with no containers present, adjust that channel downwards.
Calculated Pressure shows the current PSI reading from the transducer.
TD10 XDCR Type shows the type of transducer used.
0 = 2.0 PSI 2 = 5.0 PSI 4 = 15.0 PSI 8 = 105.0 PSI

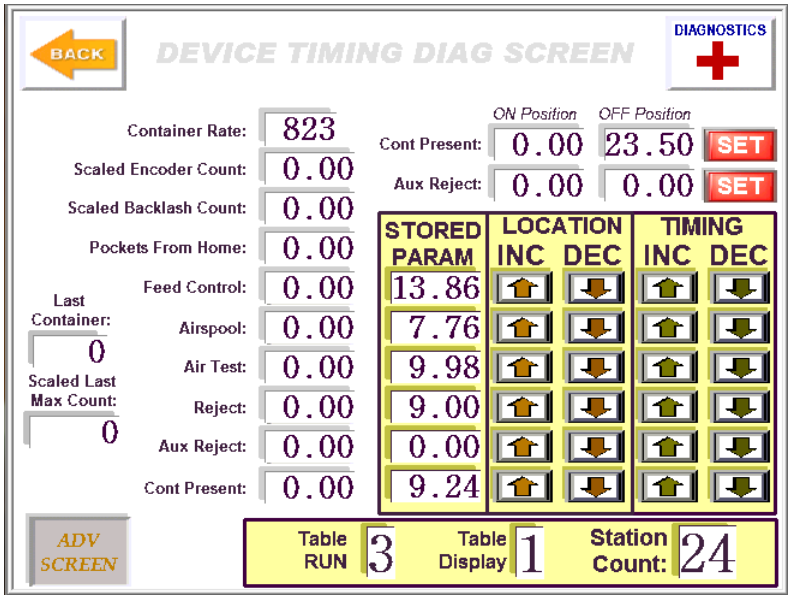
Control Output Diagnostics



The Control Output Diagnostics screen allows the user to view the status of all inputs (switches and sensors) along with the capability of turning on and off all outputs of the control. Outputs are located on the left side of the screen, and inputs are on the right side. Depending on the desired output to toggle, it may automatically change back to the original state if the controller is holding it on.

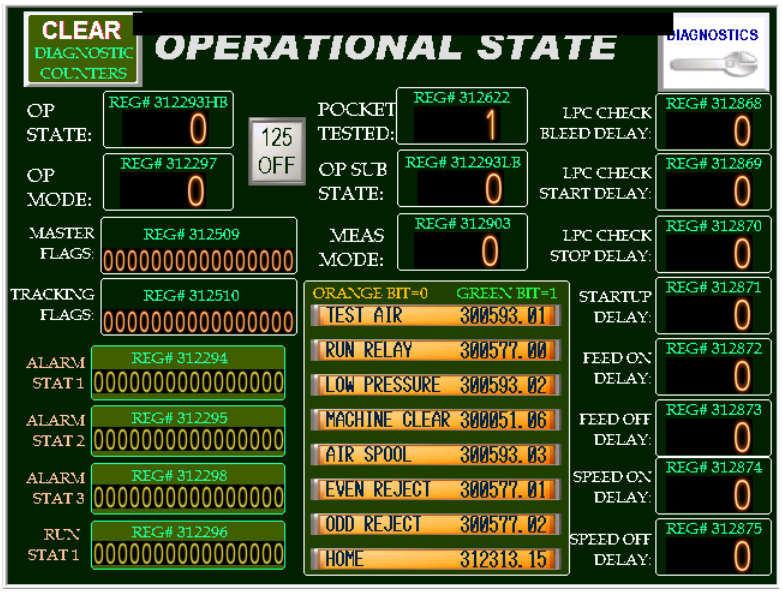
Device Timing

The Device Timing diagnostic screen shows the location of every device on the tester. The location values on the left hand side of the screen are the current position. The stored parameter values are the static location when the tester is at the home position (reset sensor sensing the reset flag).
**Note: Take great care not to change any values on this screen. This is only to be adjusted with the help of product support.



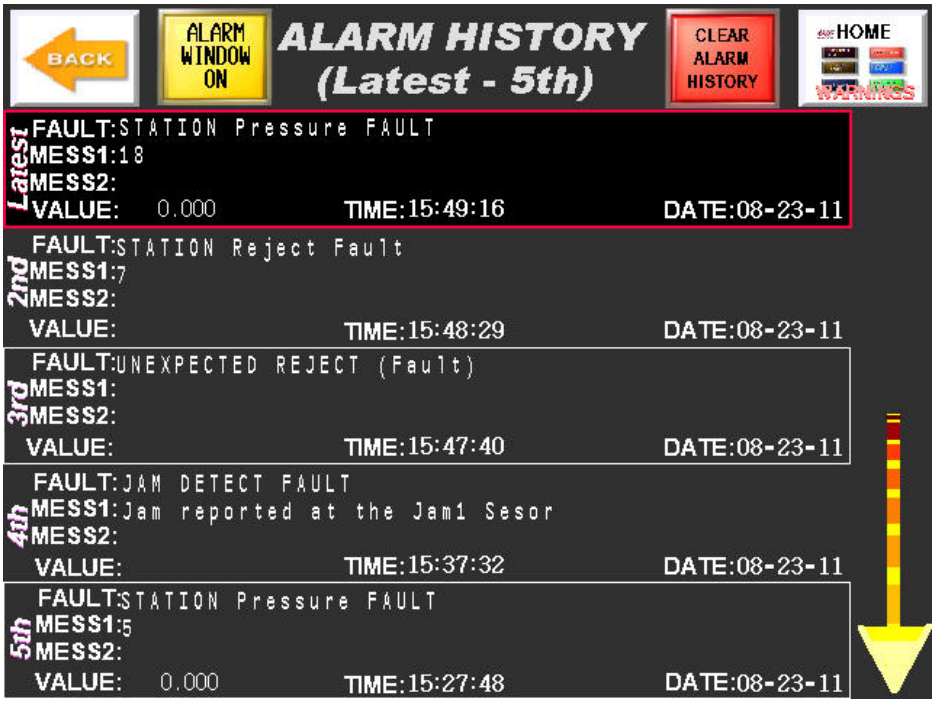
Operational States

The Operational State diagnostic screen allows you to view the state machine of the tester controller. You can view what mode the tester is testing in, view the MD30 outputs, and view the delays used in controlling the tester. This screen is view only. There is nothing on this screen that can be changed.


CLEAR DIAGNOSTIC COUNTERS
OPERATIONAL STATE
DIAGNOSTICS
OP STATE: REG# 312293HB 0
OP MODE: REG# 312297 0
MASTER FLAGS: REG# 312509 0000000000000000
TRACKING FLAGS: REG# 312510 0000000000000000
ALARM STAT 1: REG# 312294 0000000000000000
ALARM STAT 2: REG# 312295 0000000000000000
ALARM STAT 3: REG# 312298 0000000000000000
RUN STAT 1: REG# 312296 0000000000000000
125 OFF
POCKET TESTED: REG# 312622 1
OP SUB STATE: REG# 312293LB 0
MEAS MODE: REG# 312903 0
ORANGE BIT=0 GREEN BIT=1
TEST AIR 300593.01
RUN RELAY 300577.00
LOW PRESSURE 300593.02
MACHINE CLEAR 300051.06
AIR SPOOL 300593.03
EVEN REJECT 300577.01
ODD REJECT 300577.02
HOME 312313.15
LPC CHECK BLEED DELAY: REG# 312868 0
LPC CHECK START DELAY: REG# 312869 0
LPC CHECK STOP DELAY: REG# 312870 0
STARTUP DELAY: REG# 312871 0
FEED ON DELAY: REG# 312872 0
FEED OFF DELAY: REG# 312873 0
SPEED ON DELAY: REG# 312874 0
SPEED OFF DELAY: REG# 312875 0

Alarms/Errors Screen

The Alarms/Errors Screen gives you greater detail about the errors and warnings that pop up on the display screen. The system keeps track of the last 20 errors. The right hand side of the screen has up and down arrows which allow you to page down to the next set of 5 errors. Other buttons at the top of the screen allow you to turn off the Error Pop up screen and to Clear Rejects.



Error / Warning Messages

Error Name	Description
A table is not configured properly to run	Check operating parameters. This error indicates there are parameter conflicts such as: 1. Air Spool before container present sensor 2. LOW_PRESSURE_CHECK_MODE set to automatic and Supply pressure 1 is not enabled 3. Position exceeds station count 4. If ratio num >= denom Message1 will tell which table Message2 will tell which parameter
AIR ON FAULT	The Air test switch did not detect the Air Spool actuator in the charging position within the ***Air Spool Switch Air ON Fault Time***. Pocket nn should have been charged. The Air Spool Actuator is either sluggish, loose, or the spool valve for station nn is sticking.
Air Spool cannot move closer to Air Test	This shows that there is a problem with the location of either the Air Spool actuator or the Air Test block. Verify the pocket locations of both of these devices.
Air Spool cannot move closer to Container Present	This shows that there is a problem with the location of either the Container Present sensor or the Air Spool. Verify the pocket locations of both of these devices. They should be at least a couple pockets away from each other.
Air Spool cannot move farther from Air Test	This shows that there is a problem with the location of either the Container Present sensor or the Air Test block. Verify the pocket locations of both of these devices.

AIR SWITCH FAULT	The spool valve for station nn is sticking, or the limit switch on the Air Spool Actuator is loose or faulty. The Test Air switch opened when station nn went past the Air Spool actuator. Check that the spool valve for station nn is not sticking.
Air Test cannot move closer to Air Spool	This shows that there is a problem with the location of either the Air Test block or the Air Spool actuator. Verify the pocket locations of both of these devices.
Air Test cannot move closer to Container Present	This shows that there is a problem with the location of either the Container Present sensor or the Air Test block. Verify the pocket locations of both of these devices.
Air Test cannot move closer to Reject	This shows that there is a problem with the location of either the Air Test block or the Rejector. Verify the pocket locations of both of these devices. They should be at least a couple pockets away from each other to be able to process a reject value and reject a container.
An Output is both Forced On and Forced Off at the same time.	If an output is forced On and then receives a forced Off before the forced On was disabled, then the forced On will be disabled before the Output is Forced Off.
Attempt to change a parameter when Setup Access is not bypassed - Warning	This is a warning to protect the configuration parameters. The Setup Access input is used as a security input to prevent parameters from being changed without authorization.
Attempt to write an out of range value into a Parameter	In most cases, the MI100 touchscreen will prevent this from happening. The "Message1" will tell which table PARAMETER_TABLE_1 0 PARAMETER_TABLE_2 1 PARAMETER_TABLE_3 2 MACHINE_CONFIG_TABLE 3 The "Message2" will tell which parameter
BAD SETUP PARAMETER (Fault).	The controller detected an issue with the Setup/Operator Parameters. A configuration setup parameter is bad. This message is sent to the HMI (Operator Interface). The Controller keeps the Run Relay off until the bad parameter value is fixed. A parameter is in possible conflict with a setting Message1 = the table number PARAMETER_TABLE_1 1 PARAMETER_TABLE_2 2 PARAMETER_TABLE_3 3 MACHINE_CONFIG_TABLE 0 Message2 = The message will indicate the issue such as A parameter is in possible conflict with a setting, and indicates which parameters are in conflict
Battery low Warning	Battery needs to be replaced or the battery select switch is "off" on Controller's PC Board.
CLOCK ERROR	The real time clock on the Controller appears to not operate or has not been set / initialized. Setting the clock or pressing the Fault Reset push button clears this fault. If this fault appears again after the clock has been set, then it could be a bad clock crystal, battery failure during power down or a hardware failure.
Container Present cannot move closer to Air Spool	This shows that there is a problem with the location of either the Container Present sensor or the Air Spool. Verify the pocket locations of both of these devices. They should be at least a couple pockets away from each other.
Container Present cannot move closer to Air Test	This shows that there is a problem with the location of either the Container Present sensor or the Air Test block. Verify the pocket locations of both of these devices.
Container Present cannot move farther from Air Spool	This shows that there is a problem with the location of either the Container Present sensor or the Air Spool. Verify the pocket locations of both of these devices.

Container Present cannot move farther from Air Test	This shows that there is a problem with the location of either the Container Present sensor or the Air Test block. Verify the pocket locations of both of these devices.
Container Present Sensor Fault	The Container Present sensor is not turning off between containers. The Parameter "***Container Present Sensor Off is Required***" can be set to disable this fault check. This parameter can check for a potential jam in the infeed. It could also be that the Container Present Sensor failed with its output ON
CRC error in message received from the HMI Warning	There is an error in the communication between the MD30 and HMI.
DEVICE Position Fault	Device xxxxx is positioned incorrectly. If xxxxx is the Test Air Actuator, then this actuator is positioned before the Container Present device. If xxxxx is the Odd Reject actuator, then this actuator is positioned too close or before the Air Test location. Numerical values are: Air Spool Actuator-0, Low Pressure Actuator-1, Test Air Actuator-2, Aux Actuator-3, Even Reject Actuator-4, Odd Reject Actuator-5, Feed Control Actuator-6.
EEPROM has too many bad locations	This indicates that the Controller's Data Flash has become unreliable. The Controller may need to be sent back for repair.
Fatal System Fault Firmware Checksum Bad	The Controller detected a system fault during start up diagnostics. This indicates the operating firmware has been corrupted. Return unit for repair. The CPU code space is checked on power up (or after a reset / restart). This allows the Controller to detect unwanted changes to the code. If an error occurs call service.
Fatal System Fault Hardware Fault	This fault indicates a hardware fault detected during startup diagnostics. Please record the fault and associated fault number or name and return the unit for repair. Contact Support.
Fatal System Fault Internal Fault	This fault indicates an internal fault. Please record the fault and associated fault number or name and what the tester was doing at the time. Contact support.
Fatal System Fault Watchdog Fault	This fault indicates an internal fault. Please record the fault and associated fault number or name and what the tester was doing at the time. Contact support.
FAULT RESET ON warning	Indicates the status of the fault reset switch. Could indicate a stuck switch if it stays on.
FEED BYPASS ON	This indicates that the Feed Bypass Switch is being held in the on position. This Error will not be reported.
FEED CONTROL FAULT	Either the Feed Control mechanism, the Container Present Sensor is not functioning or there is a jam in the infeed. The Feed Control output was On, but containers were not detected by the Container Present Sensor within the parameter ***FEED CONTROL FAULT STATIONS DELAY.***
Feed Supply Empty Warning	The Feed Supply sensor is not detecting a container, which is normal when the Feed Supply is empty. If cans are present, check that the Feed Supply sensor is working.
Firmware has been updated Warning	Shows that the MD30 firmware has been updated during operation.
HMI Communications Error	The "Message1" will tell which type of error Buffer overflow error Received a message from the HMI, during transmission to the HMI

HMI Issued a controlled Stop	The HMI issued a command to cause the tester to go into a controlled stop. This will typically empty out the tester, and then turn the Run Relay off.
Invalid Data In Battery Backed Ram	This error indicates the battery backed RAM may be bad. If this error appears whenever the unit is powered up, then the battery may need to be replaced. It may also indicate that the battery jumper on the Controller PC Board is OFF. Note: This will appear the first time the Controller is powered up after the battery was replaced.
JAM DETECT FAULT	A Jam was detected at n (1= Jam1, 2= Jam 2, 0= Reject Verify) The fault occurs if the Jam Detect sensor or the Reject Verify sensor stays on for more than a configurable time.
Lost Communications with HMI	*Did not receive communications with the HMI in the last 10 seconds.* Set if parameter is configured to stop tester on a loss of communication
Low External Power Supply Voltage Fault	This will stop the Tester. This warns of low or no +24vdc supplied to one of the mentioned Power Supply inputs (Remote Operator Interface, Air Control, Container Control or PLC Control). The "Message1" will tell which power supply is low: Remote Operator Interface +24v Air Control +24v Container Control +24v PLC Control +24v Remote Logic +5v PLC Logic +5v
LOW TEST AIR Fault	The supply pressure has dropped below the pressure value required for testing containers as determined by the ***Supply Pressure Min Limit*** parameter. The value yy.y is the supply pressure reading from the pressure transducer when the fault occurred. Set ***Supply Pressure Min Limit*** to 0.0 to disable this fault. Note: Every can after this fault is rejected until tester is clear.
Main Power supply is low	This may indicate the "Power In" +24 vdc is too low, or that the Controller needs servicing. This may temporarily appear on power up or power down.
MD30 is configured to allow Firmware update Warning	Whenever the port pin is set to allow for firmware update on power up is set
MD30 Issued a controlled Stop	MD30 issued a stop because a parameter was changed in the running table that required the tester to be stopped or the HMI set the table selected for run to defaults.
MODULATION FAULT	The modulation timing advance required for the indicated device is either more than one station advance or the device action was requested to advance before a preceding device. Numerical values are: Air Spool Actuator-0, Low Pressure Actuator-1, Test Air Actuator-2, Aux Actuator-3, Even Reject Actuator-4, Odd Reject Actuator-5, Feed Control Actuator-6
NEED RESET PULSE warning	This warning occurs on power up or Controller reset and indicates the Controller needs to see the reset signal from the Timing Generator or the Home signal (if Home is Enabled) to establish the position of the wheel. This warning is cleared when the Controller sees the rest signal. If this does not clear after the wheel has read at least one complete revolution, then there is an issue with the Timing Generator or the Home sensing.

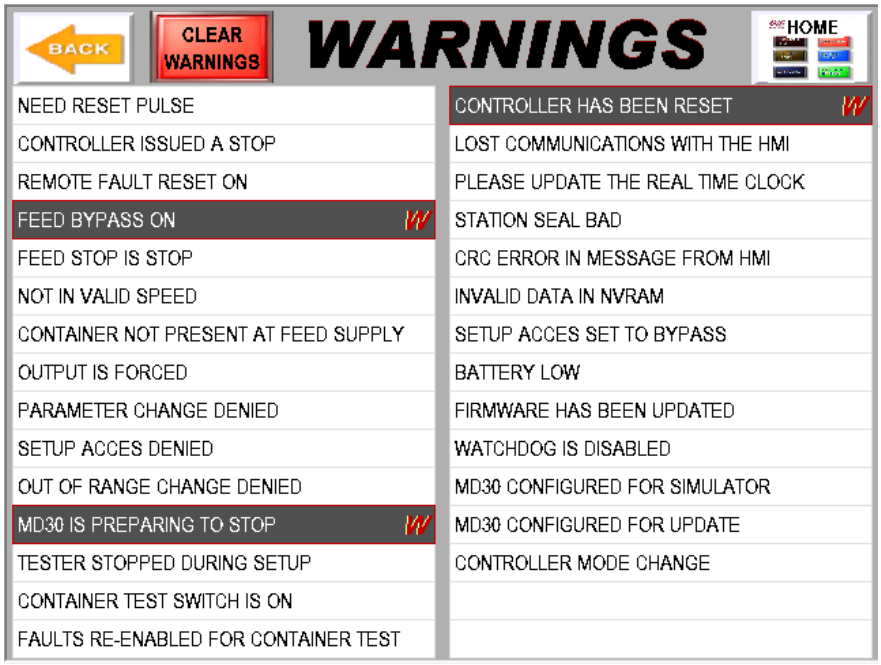
One of the Parameter Configurations should be set to defaults	Indicates the table indicated has never been initialized. "Message1" will tell which table PARAMETER_TABLE_1 1. PARAMETER_TABLE_2 2 PARAMETER_TABLE_3 3 MACHINE_CONFIG_TABLE 0 To remove this error, enable setup of the mentioned parameter table and press the SET TO DEFAULT button. This will clear out any prior setup in this parameter table.
Operating Speed Low	The Tester cannot feed containers because the tester is running slower than the minimum speed specified by the ***Minimum Operating Speed*** parameter. If you need to run the tester at this slow speed, set the ***Minimum Operating Speed*** parameter to 0.
Output Forced	Warns that an output is in the forced state. Go to the Output Signals diagnostic screen to remove the forced output.
PARAMETER CONFIG Table has not been initialized	The operator will need to set the table to defaults first before attempting to change any parameter in the table. Note: This error should only be seen during production setup (or if thedefault Emulated EEProm is reset) before all the tables are set to The table is defined in the message. The Message1 will tell which table PARAMETER_TABLE_1 1 PARAMETER_TABLE_2 2 PARAMETER_TABLE_3 3 MACHINE_CONFIG_TABLE 0
PARAMETER out of range or out of bounds (Fault).	A parameter from one of the Parameter tables or the Machine Configuration is out of range and will need to be set The Message1 will tell which table PARAMETER_TABLE_1 1 PARAMETER_TABLE_2 2 PARAMETER_TABLE_3 3 MACHINE_CONFIG_TABLE 0 The "Message2" will tell which parameter
PARAMETER TABLE CRC ERROR (Fault).	The table at fault is defined in the message. Cleared by changing a parameter or setting them to default The Message1 will tell which table PARAMETER_TABLE_1 1 PARAMETER_TABLE_2 2 PARAMETER_TABLE_3 3 MACHINE_CONFIG_TABLE 0
POWER DETECT FAULT	The Controller detected a system failure during its startup diagnostics. The controller power detect circuit is bad. When the controller detects power turning off, the Controller protects the data in non-volatile memory/ The Controller will function with this fault but the reject counters in non-volatile may be incorrect.
REJECT AIR FAULT	If REJECT_AIR_SENSOR_ENABLE is enabled, then this will fault if the Reject Air Switch is not ON. This is a sensor input that verifies the rejector is working properly.
Reject cannot move closer to Air Test	This shows that there is a problem with the location of either the Rejector or the Air Test block. Verify the pocket locations of both of these devices. They should be at least a couple pockets away from each other to be able to process a reject value and reject a container.
Reject Gate not responding fast enough	If the Reject Air OK parameter is enabled and Reject solenoid sensor is monitoring the reject solenoid, this error will appear when the reject solenoid is not responding within the amount of time determined by the corresponding parameter.

REJECT VERIFY FAULT	The Controller rejected a container from station nn, but no container was detected by the Reject Verify sensor in the reject chute. This fault indicates that the rejector is not operating properly, or there is a jam in the rejector. The number of stations is set by the parameter ***Reject Verify Stations Delay***
Set Up Access Switch is ON Warning	Access is denied - check switch or jumper. Note: This feature can be disabled in the parameter settings.
STATION Pressure FAULT	Pocket not charging. For pocket testing only. Fault indicates a bad pocket such as a broken air test line, plugged or reversed spool valve. The pressure in the charged pocket of station nn with a container is below a minimum threshold ***Station Minimum Air Limit***. A container was detected at the station, the Air Spool Actuator charged the station, but the Air Test reading was lower than the values set by Operating Parameter ***Station Minimum Air Fault Limit***. A value of zero disables this fault. The pressure value from station nn is displayed as a last reject on the "Totals and Last Reject" display. This could also indicate that the odd and even transducer wires are swapped.
STATION Reject Fault	Station nn rejected a higher number of containers than specified by the Reject Parameter ***Station Reject Ratio***. If this error occurs, Station nn could have a bad seal, or the protrusion is set incorrectly.
STATION SEAL BAD nn	The seal for station nn is deteriorating. This is a warning, it does not stop testing. The average of the test pressure readings from station nn differs from the average test pressure readings from all stations by a configurable percentage specified by ***Station Good Seal Percent Limit***.
STOP IS ON	The Feed/Stop switch is in the Stop position, keeping cans from being fed. This Error will not be reported.
Table selected to run was invalid, it has been changed to Table 1	Message 1 is the invalid table selected for run. Due to some occurrence, this parameter table is invalid and is not able to be used to run the tester.
TD10 Error	There is a problem with one of the Pressure Transducers (TD10). Message1 indicates which TD10 has an issue: Odd Transducer Even Transducer Supply 1 Transducer Supply 2 Transducer Message2 indicates the issue or error: No Reported Error No response from this TD10 Did not receive a ACK from this TD10 Calculated CRC did not match CRC from this TD10 The TD10 is not reporting the ATTN line is Set The TD10 is not reporting the ATTN line is Cleared The XDCR Type read from TD10 does not match parameter setting The response sync code did not match TD10_RESPONSE_SYNC. There was a message length error. Either the Buffer Over Flowed Or the "Length" byte from the TD10 was > 2 The TD10 Initialization State Machine encountered an undefined state. The MD30 received data while transmitting The MD30 encountered an undefined error The MD30 encounterd ACK/NAK response when it expected a data response The MD30 encounterd data response when it expected a ACK/NAK response The TD10 Master State Machine encountered and undefined state. The MD30 Master State Machine requested to read a TD10 that is not enabled.

TESTER REJECT FAULT	The Tester rejected a higher number of containers than specified by the Operator Parameter (***Tester Reject Ratio***). nn rejects occurred in mmmm containers tested. The ratio of reject to containers is specified in the Operator Parameter ***Tester Reject Ratio***
Timing Count Fault	nnnn is the +/-number of timing pulses in error between detections of the Encoder "Z" signal or Reset Flag. This could indicate an encoder failure, wiring issue, the encoder or reset sensor is loose. This Fault is determined by the ***Timing Generator Count Per Rev Tolerance*** parameter.
Timing Speed Fault	Indicates a problem with the Timing Generator. Counts are coming in at too high of rate. To remove this error, slow the tester down.
Tracking State Machine Error	Message 1 is the type of error Message 2 is aditional information The BCD may display additional information such as a state in a state machine
Unable to set the PARAM_TABLE_SELECTED_FOR_RUN	This indicates a hardware problem with the CPU's Emulated EEPROM memory. Note the error along with what was being done on the tester at that time, and contact support.
Undefined Master State	Message 1 is the Operational State Message 2 is the Operational Sub State
UNEXPECTED REJECT	The Reject Verify sensor detected a container in the reject chute but did not turn on the rejector. This could indicate that the Reject Gate is sticking or not functioning properly.
Warning: Device did not transition	(report if it stays on for a complete pocket)
XGATE Code may be corrupt	The XGATE code space is checked on power up (or after a reset / restart).. This allows the Controller to detect unwanted changes to the code. If an error occurs call service.

Warnings Screen

This is a display-only screen that shows the current warnings that are active on the tester. The warning icon only shows up on the HOME page when there are warnings. A warning does not cause the tester to shut down, but alerts the operator that there is a potential problem.



Chapter 6: Low Pressure Test

The low pressure test is the best method of checking the consistency of pockets on the air tester. This test puts a small amount of air into each pocket without a can and then displays the pressures values for each pocket on the display. This can be viewed using the standard running screen, or with the bar graph display. To start the low pressure test, the user must turn the low pressure switch to the on position. This switch is typically located on the tester's main switch panel. The low pressure test can also be initiated by pressing the Low Pressure Test button on the Home Screen of the display. After the low pressure test is initiated, the display will go through a series of screens detailing the status of the test initialization.

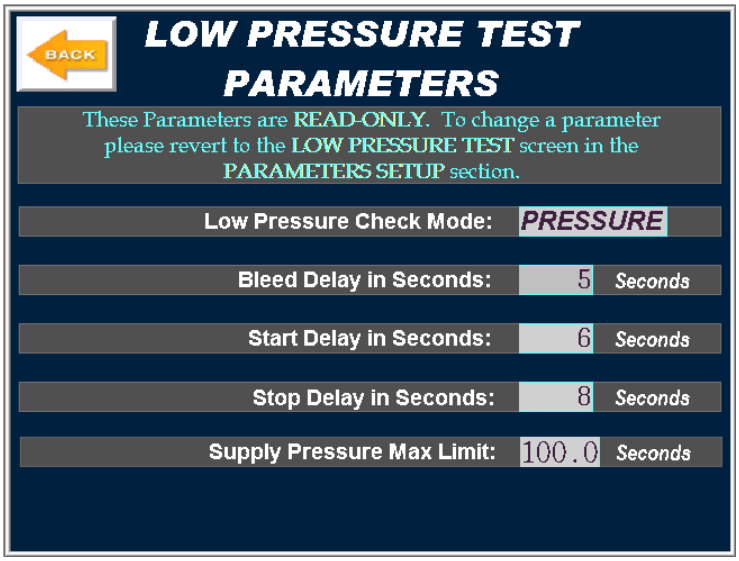
Steps for initializing the low pressure test:

1. Clear the tester of cans and stop charging pockets
2. Turn off the Test Air solenoid
3. Wait for Bleed Delay if Time Based Mode, or for the pressure to drop below a preset value if Pressure Based Mode.
4. Turn on the Low Pressure Air solenoid output
5. Wait for the Start Delay.
6. Turn on the Air Spool Actuator to charge pockets
7. Prompt the operator to set the needle valve to a value of 10"H_2O
8. Display test data on the screen.

It is very important, during the Low Pressure Test, that bad pockets are identified and fixed. All pockets on the tester should be close to each other as displayed on the bar graph. Having functional and consistent pockets will make setting the reject limit much easier.

On the screen above, press BEGIN to start the Low Pressure check, or CANCEL to go back to the HOME screen.

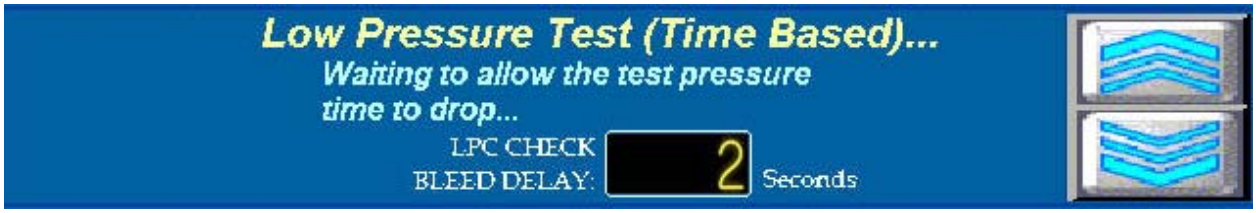
Pressing L.P.T PARAMS will take you to view the settings for all of the delays used in Low Pressure Check. These values are Read Only, so if you need to make any changes, exit back to the HOME screen and go to PARAMETER SETP.


BACK
LOW PRESSURE TEST PARAMETERS
These Parameters are READ-ONLY. To change a parameter please revert to the LOW PRESSURE TEST screen in the PARAMETERS SETUP section.
Low Pressure Check Mode: PRESSURE
Bleed Delay in Seconds: 5 Seconds
Start Delay in Seconds: 6 Seconds
Stop Delay in Seconds: 8 Seconds
Supply Pressure Max Limit: 100.0 Seconds

During the transition into the Low Pressure Check, the MI100 will display the following screens to show the status of the tester and guide the operator through the process.

1. The tester stops the infeed and waits for the tester to be clear all of the existing containers before proceeding.

2. The system turns off the Test Air and waits for the Test Pressure to bleed off. In the case of a Time Based Low Pressure Test, this is based on a fixed amount of time. If the system is set up for Pressure Based Low Pressure Test, the system waits for the Test Pressure to drop below a preset value before proceeding.



Low Pressure Test (Pressure Based)...
Waiting for test pressure to drop below Low Pressure Check p.s.i...
1234 TEST PRESSURE P.S.I
12345 TEST PRESSURE "H2O

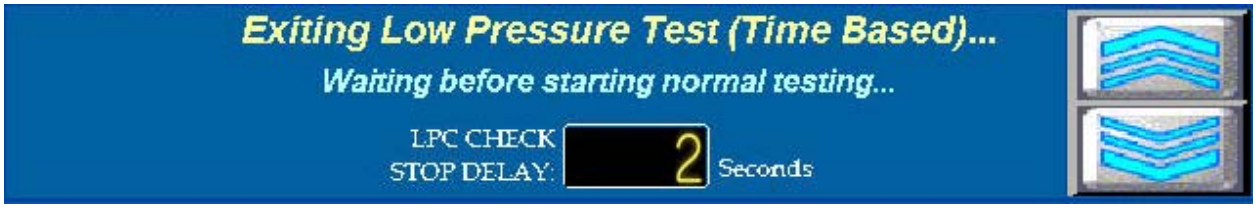
3. After the bleed delay, the system turns on the Low Pressure Air and waits for a number of seconds (Start Delay) before turning on the spool valve to start charging pockets.

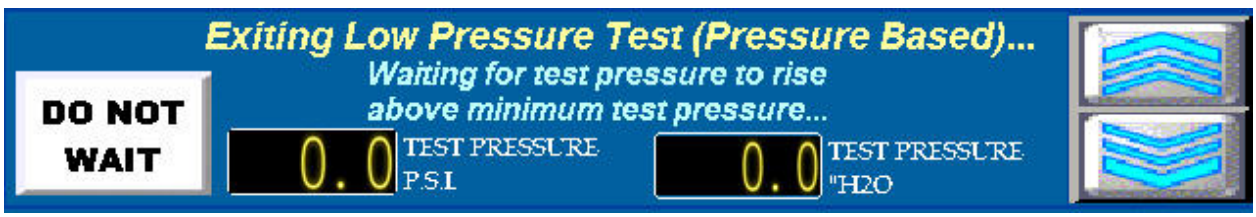
4. At this point, the screen prompts the user to adjust the Low Pressure needle valve on the tester to set the Low Pressure air to 10" H_2O setting. This value may change based on the particular tester used. Once this is done, the user must press CONTINUE to proceed with the Low Pressure Test.

5. Once the Low Pressure test is done, the user can switch the Low Pressure switch to the OFF position and the system goes through the process to return the tester to normal running mode. First, the system turns off the air spool actuator and waits for all charged pockets to move through the tester

6. Next the tester turns off the Low Pressure air and waits for a delay.

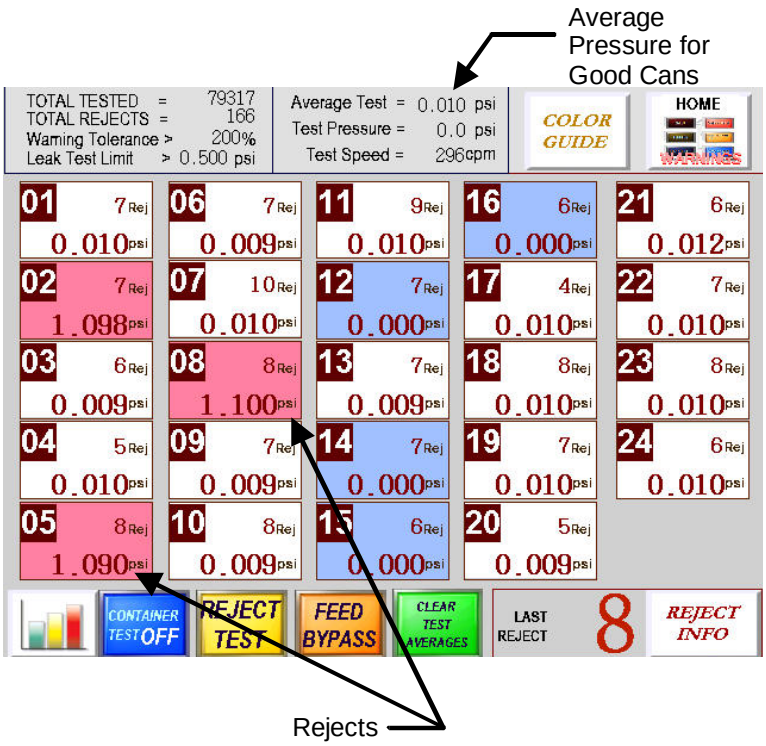
7. The system then turns on the Test Air and in the case of Timed Low Pressure Check, waits for another delay (Stop Delay) before allowing cans to be fed back into the tester. If the system is set up for Pressure Based Low Pressure Check, the system will wait for the Test Pressure to go above a safe level (Supply Pressure Min Limit) before allowing cans to be fed.





Chapter 7: Setting Reject Limit

The correct setting of the reject limit is important for being able to detect the smallest leak possible while keeping from having many false rejects. If the reject limit is too high, the tester may not catch the calibrated leakers. Too low, and you will spend too much time emptying out the reject tub.



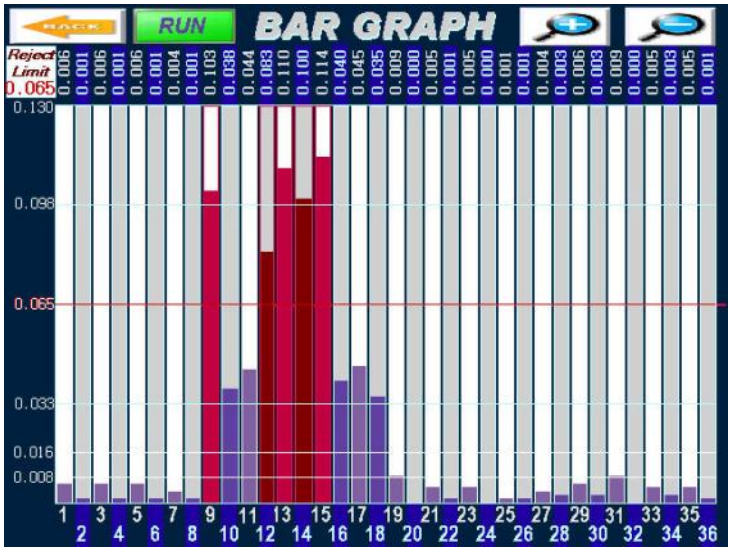
For setting the reject limit, first run a batch of good cans and also calibrated leakers.

In the picture to the right, the Average Test, and Reject Pressures are detailed. Set the Reject Limit, midway between the Average Test and the lowest of the calibrated leaker values.

To set the Reject limit:

1) Press the Leak Test Limit value at the top left of the screen,
2) Enter the password
3) Set the required reject value.

Set the Gross Reject Limit 2-3 times the Reject limit, but make sure it is above the highest calibrated leaker value. The Gross Reject Limit can be found under Parameters Setup on the Home screen.



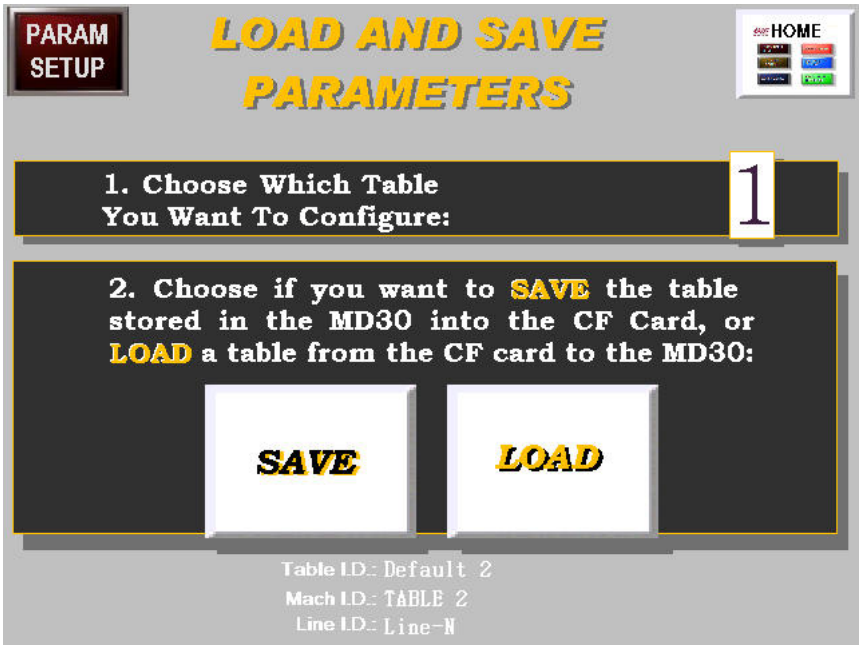
Some operators find it easier to use the bar graph display to determine the reject limit.

1) Run good cans along with calibrated leakers.
2) When the tested containers show up on the bar graph screen, press the PAUSE button to freeze the display.
3) Look at the values (at the top of the screen) for the highest good can and the lowest leaker.
4) Set the reject limit midway between the two. To set the reject limit, press the Reject Limit button on the top left of the screen, enter the password, and set the required value

Chapter 8: Saving configuration

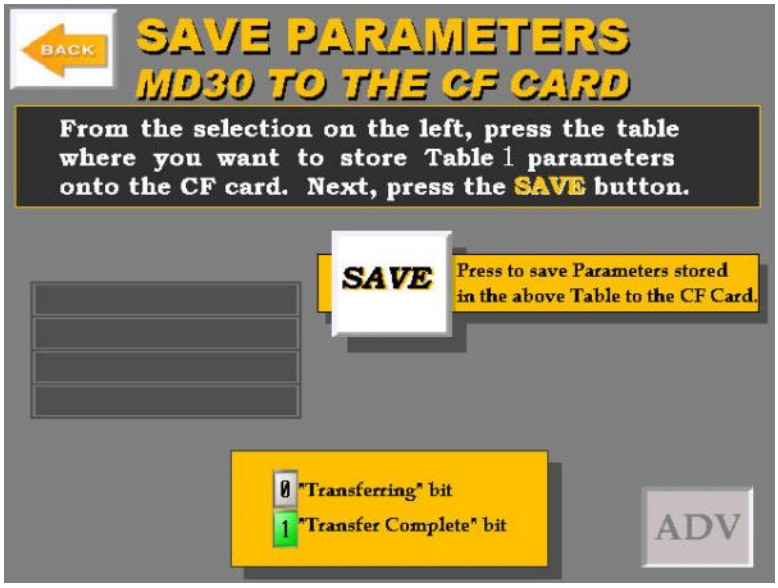
The configurations for the system can be saved to a compact flash card which is located on the back side of the MI100 touch screen display.

The Load and Save screen allows you to pick the configuration table (1, 2 or3) that you would like to either save to the CF card, or load from the CF card. From there, select if you are Saving or Loading, and the display will change to the appropriate screen.


PARAM SETUP
LOAD AND SAVE PARAMETERS
HOME
1. Choose Which Table You Want To Configure:
1
2. Choose if you want to SAVE the table stored in the MD30 into the CF Card, or LOAD a table from the CF card to the MD30:
SAVE
LOAD
Table I.D.: Default 2
Mach I.D.: TABLE 2
Line I.D.: Line-N

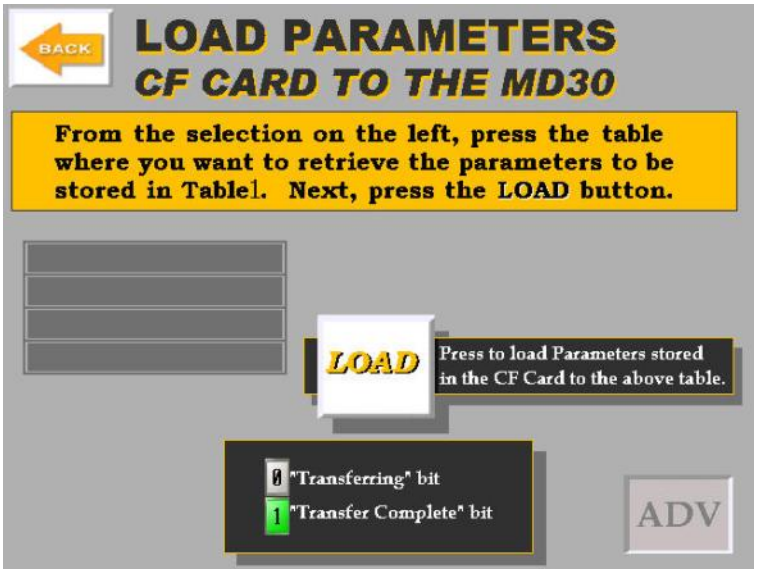
Saving a Configuration

On the Save Parameters screen, the left hand side of the screen shows the locations on the memory card that you can save the current configuration to. Select the location, and verify that it is highlighted, then press SAVE. You will see at the bottom of the screen the Transferring bit indicator turn green momentarily, and then the Transfer Complete bit indicator will turn green indicating that the configuration is saved.


BACK
SAVE PARAMETERS MD30 TO THE CF CARD
From the selection on the left, press the table where you want to store Table 1 parameters onto the CF card. Next, press the SAVE button.
SAVE
Press to save Parameters stored in the above Table to the CF Card.
0 "Transferring" bit
1 "Transfer Complete" bit
ADV

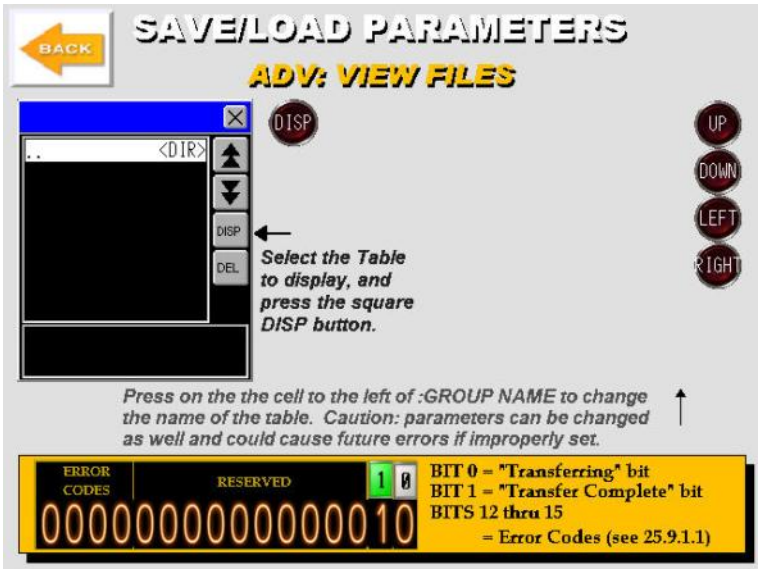
Loading a Configuration

To load a configuration into the system from the memory card, select the configuration from the left hand side, verify it is highlighted, and press Load. You will see at the bottom of the screen the Transferring bit indicator turn green momentarily, and then the Transfer Complete bit indicator will turn green indicating that the configuration is loaded into the correct configuration table.


BACK
LOAD PARAMETERS
CF CARD TO THE MD30
From the selection on the left, press the table where you want to retrieve the parameters to be stored in Table1. Next, press the LOAD button.
LOAD
Press to load Parameters stored in the CF Card to the above table.
0 "Transferring" bit
1 "Transfer Complete" bit
ADV

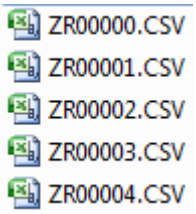
Advanced Screen

On each of the Save and Load screens, there is an Advanced screen. This allows you to navigate the files on the compact flash card and display, and look at some of the data. Selecting a file name and pressing the grey DISP button will display the unformatted configuration data.


BACK
SAVE/LOAD PARAMETERS
ADV: VIEW FILES
DISP
<DIR>
DISP
DEL
UP
DOWN
LEFT
RIGHT
Select the Table to display, and press the square DISP button.
Press on the the cell to the left of :GROUP NAME to change the name of the table. Caution: parameters can be changed as well and could cause future errors if improperly set.
ERROR CODES
RESERVED
1 0
0000000000000010
BIT 0 = "Transferring" bit
BIT 1 = "Transfer Complete" bit
BITS 12 thru 15
= Error Codes (see 25.9.1.1)

Compact Flash Card

On the back of the MI100 display, there is a door to access the compact flash memory card. This holds the saved configurations for the TestAlert system. Be sure not to open this door during a save or load operation, as the data may become corrupt. If the CF Card is plugged into a computer, the configuration files are located under the FILE subdirectory and are labeled as shown to the right.



ZR00001.CSV – ZR00004.CSV relate to Tables 1-4 respectively. The filenames have to stay as shown so they are able to be recognized by the touchscreen.

Chapter 9: Networking

Connecting to the plant network is done through the MI100 Display.

Ethernet wiring

A standard Ethernet network cable can be connected to the left-hand side of the display. This can be connected to a local Ethernet switch in the control panel.

Determining IP Address

To get data from the HMI, you first need to know the IP address of the MI100 display. To view this information, follow these steps.

1. Be sure that the screen is powered up and connected to the network.
2. Touch the upper right hand side of the screen, let go, and within one second, touch the lower left hand side of the screen. This has to be done inside the black border of the screen.
3. A grey menu will appear on the bottom of the screen.
4. Press the Arrow pointing to the right.

5. Press the button labeled IP Address.

6. The current IP Address will be displayed on the screen.

Changing the IP Address

1. Be sure that the screen is powered up and connected to the network.
2. Touch the upper right hand side of the screen, let go, and within one second, touch the lower left hand side of the screen. This has to be done inside the black border of the screen.
3. A grey menu will appear on the bottom of the screen.
4. Press the Offline Button.

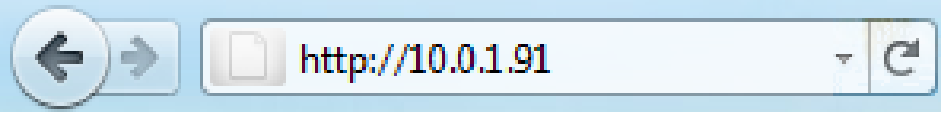
5. Press Main Unit Settings

and then Ethernet Local Settings

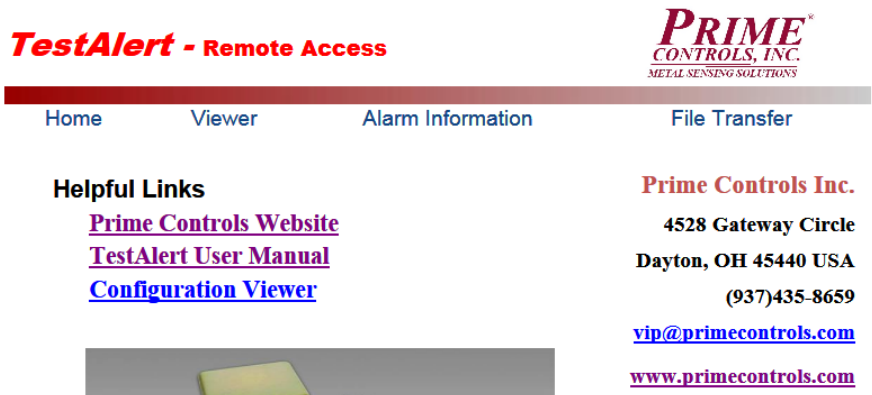
6. From here you can set a local name, along with the IP address.

Accessing the Screen Web Server

Once you know the IP address of the screen, you are able to pull up the screen's web server. From your preferred internet explorer (Microsoft Internet Explorer, Firefox Mozilla, etc,) connected to the same network as the MI100 screen, type in the IP address of the screen into the address bar.



The screen to the right should come up in your browser. You will notice near the top of the screen the menu options:



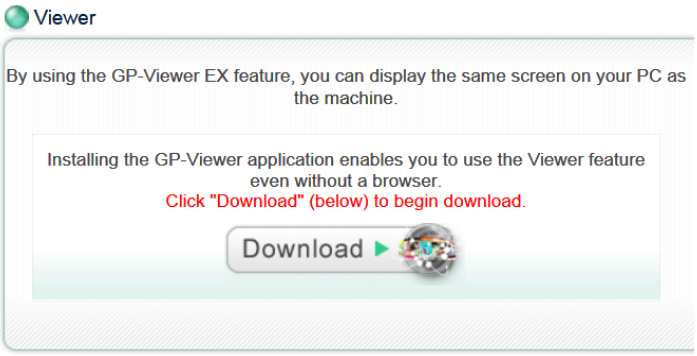
- Home
- Viewer
- Alarm Information
- File Transfer

Home

Pressing Home from other menu areas will take you back to this screen.

Viewer

Takes you to a screen where you can download the program GP-Viewer EX from the internet. This program allows you to monitor the MI100 screen display from your computer. The free version of this software has a yellow bar across the screen blocking a portion of your view. You can purchase a license key from Prime Controls (SW230) which unlocks the demo mode. The license key is only good for one screen. The user of this program must take care to not change settings or go into different modes of the tester while it is in operation. Doing so can cause the tester to go into or out of low pressure mode. There are also certain screens that are graphic intensive and may cause errors to pop up on the screen if accessed.


Viewer
By using the GP-Viewer EX feature, you can display the same screen on your PC as the machine.
Installing the GP-Viewer application enables you to use the Viewer feature even without a browser.
Click "Download" (below) to begin download.
Download

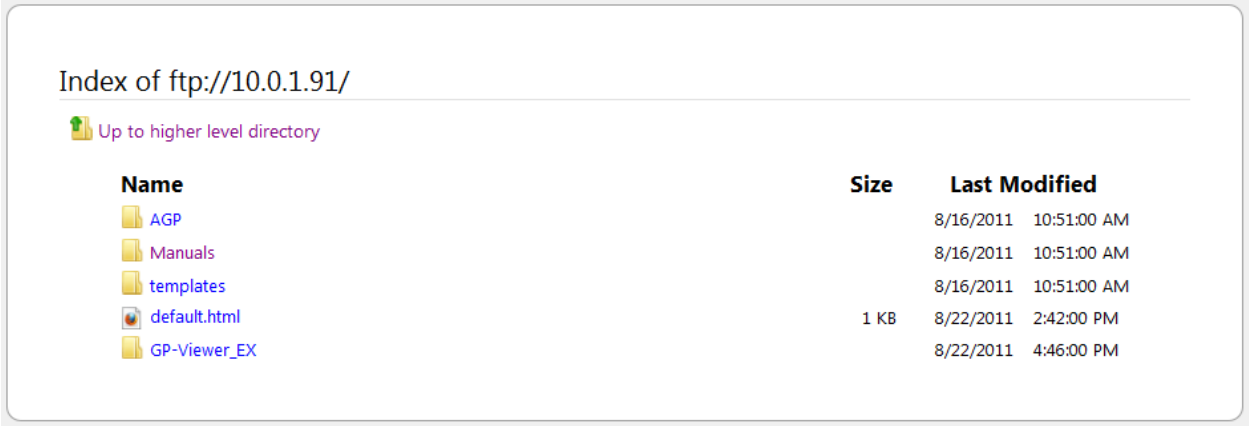
Alarm Information

This screen shows a listing of alarms for the tester along with the time, date and recovery time. At the bottom of the screen you can set up RSS Feeds directly in your RSS reader. Some of the more popular readers are in Microsoft Outlook and Internet Explorer. There should be a section for RSS Feeds. Right Click on it and select Add New Feed. Then copy the text link below into the location box in Outlook, and it is set up. Any time there is an error, the RSS feed will show the Alarm information.

RSS
You can save Alarm information to RSS Reader. Copy the website information below to your RSS Viewer. Typically, this is Outlook or other email program.
http://10.0.1.91/goform/Controller?req=alarm_rss&block
RSS FEED

File Transfer

The File Transfer section allows you to download documents that are saved on the CF (Compact Flash) card in the MI100 Terminal. User manuals, viewer program, saved configurations, reports, and configuration viewer are all saved in this CF Card. The card can also be removed from the back of the screen and plugged into a computer for more direct access.



Chapter 10: Troubleshooting

Problems with HMI

Power Issues

Power is required on the MI100 when starting up the MD30 controller. Once the system is up and running, power can be removed from the MI100 for maintenance or other uses without harming the testing capabilities of the tester. A green LED on the right hand side of the screen will be on if there is power to the unit.

Communication

If the communication wiring is disconnected or wired wrong, the screen will display an error:

--Response timed out for device read command—

If this error appears, check the communication cable from the MD30 controller to the MI100 display. Verify it is connected to COM2, and that all wires on the MD30 side are connected securely and also go to the correct pins according to the wiring diagrams in Chapter 2.

Screen not responding

If the screen does not respond to a command, check that there is not an error displayed at the top or bottom of the screen, the communication cables are connected securely and that the MD30 has power to it. Also check that the CPU Status LED on the MD30 is green.

Problems with MD30

LED indication

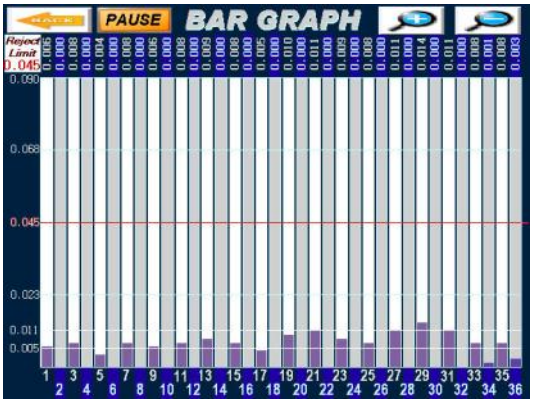
There are 6 LEDs visible through the cover of the MD30. Five of those LEDs are for power indication. These are the smaller Yellow (Amber) LEDs located near the separate power inputs for the MD30 controller. Due to the safety of the design in the controller, separate power connections need to be made to each of the separate sections of the board. If some of the inputs or outputs are not working, verify that the LED indicator is on so that section has power.
The last LED indicator has to do with the CPU processor. If the processor is working correctly, this LED will be Green. If the processor is halted for some reason, the LED will be Red. If there is a Red LED, try powering the unit off, wait 30 seconds and power back on again. If this continues to occur, consult the factory.

Problems with the Transducers

Transducer always shows a value above zero.

If the transducer has been exposed to a pressure higher than its "proof pressure", this can cause the unit to go out of calibration and show a higher value than normal. To get a better view of this value, go to the diagnostics screen and then to Pressure/Counts. With a properly calibrated transducer, the Latest Pressure reading will be at about 100 counts which equals 0 psi. If the unit is quite a bit out of spec (>120) when no pressure is applied, you will have to send the unit to the factory for repair. The transducer will function after it is damaged as long as the pressure exposed does not exceed the burst pressure of the transducer.

Transducers are fluctuating between even and odd.



This is typically shown as a sawtooth on the bar graph display. The even and odd transducers in this situation are not generating the same pressure values. The bar graph display at the right shows that the odd pockets are showing pressure and the even ones are displaying a minimal pressure.

Solution: First determine if the issue is with the transducer, test block, or tubing between the transducer and test block.
One method is to remove the transducers from the test hoses, leave them plugged into the controller and go to the Diagnostic Screen for Pressures/Counts. Run the tester with the TD10 transducers disconnected from air and see what values are coming in for the even and odd. At 0psi, even and odd should be displaying a Latest Pressure value of about 100(counts). If there is a difference between the transducers, this screen will allow you to adjust the transducer so it is displaying a value of 100 counts.
If one or both of the transducers has been hit with a pressure above its proof pressure limit, it is possible that the unit has been damaged and will need to be replaced.
If the odd and even transducers show equal levels, the problem is in the tubing leak or a score line on the test block.

Problems with Tester

Tester does not run

There are three main areas that may cause the tester not to run.

- The main test pressure is not enough to engage the mechanical pressure switch.
    - This pressure switch is external to the TestAlert control system.
    - Check the incoming pressure and regulators to make sure there is enough pressure to run.
- There is a jam
    - Sometimes the mechanical limit switches are not wired into the MD30. If a jam occurs in this case, the MI100 screen will not report an error, but the tester will be stopped immediately. The limit switches are typically located on the infeed, and rejector areas.
- The MD30 is keeping the tester from running.
    - If the MD30 keeps the tester from running, there will be an error on the screen telling the user what the problem is.

Tester does not open the Feed Supply (can stop) (Containers not feeding)

- Check for errors on the MI100 screen
- Be sure that the MD30 is getting a signal from the Feed Supply sensor
- Verify that the Feed Supply switch is in the feed position (Check in Diagnostics)
- In Diagnostics, toggle the FEED CONTROL output to verify it works
- Is the tester in low pressure mode?
- Is there PLC logic controlling the Feed Supply (Can Stop)?

Tester does not reject bad containers

This problem could be due to a few different conditions: the MD30 is not seeing a container going into the pocket, the container is not recognized as being a reject, or the rejector is not working correctly.

- When running the tester with cans, check the Running Screen. If cans are being consistently fed into the tester without gaps, there should not be any blue colored pockets on the screen. A blue pocket is a missing container. If this is the case, check the Container Present Sensor to make sure it is sensing the containers consistently.
- Run low pressure check to verify that all pockets are working consistently.
- When running a bad container, look at either the Running Screen or Bar Graph Display to see if the bad container's pressure value is above the Leak Test Limit. If not, this limit may need adjusting.
- If pressure values are too low for all leakers, there may be a scored test block. If the test block gets debris on it, this can wear score marks on the surface and let the test air out during test. In this case, the test block needs to be machined or replaced.

- On older flat valve testers there is an oiler mechanism which oils the test valve ring. This oil can build up and plug up the test block and hoses leading to the TD10 transducers, reducing their sensitivity.
- If bad containers are identified as rejects on the Running Screen (red box), then the issue may be with the rejector. Be sure the rejector solenoid fires at the correct position, and long enough when there is a reject. Check the Device Setup Procedure.

Tester is randomly rejecting good containers

If good containers are randomly rejected from the tester, it could be one of two issues. Either there is a problem with the testing of the containers, or there is a problem with the rejector.

- Check the Running screen on the MI100 to determine if the rejected container was identified as a reject by the TestAlert system. If it was, there would be a red box for the pocket that was rejected, and the rejected containers number would increment by one.
    - If a container rejects without being shown as a reject on the display, this is an issue with the rejector. See the section: **Rejector is rejecting good containers.**
    - If the container is shown to be a reject on the screen, the fault may be with the air test. See the section: **Air Test is randomly rejecting good containers.**
- Look in the reject history to make sure that it isn't one or a couple pockets causing all of the rejects. If it is, see the section **Tester is rejecting good containers from one pocket**.

Tester is rejecting good containers from one pocket.

If one pocket is rejecting a significant quantity of containers, the **Station Reject Fault** should shut down the tester if this parameter is enabled. This is most likely an issue with the pocket setup or seals.

- Check the top rubber seal to make sure there isn't a score on it. This would let the pressure inside the can leak to the pocket.
- Check the protrusion. If the can is not sealed up against the top rubber seal this can cause the pressure inside the can to leak into the pocket.
- Check for the seating of the can on the bottom plate. If the can does not seat correctly or is at an angle, this can cause a bad seal on the top rubber seal.

Tester is accepting bad containers from one pocket

There could be a variety of problems with the pocket anywhere from the air lines supplying the pocket, down to the test spool valve.

- Run a low pressure check to see if that pocket fails this check. If that pocket does not fail the low pressure check, it is most likely an issue with the protrusion being too high in the pocket so when a can is in the pocket the pocket itself does not close enough.
- Check the top rubber seal to make sure it is sealing on the pocket itself.
    - Check the wear on the seal. If the wear is uneven, it may be that the pocket is trying to close too hard and bending the rod, causing the opposite side of the pocket to not seal.
    - Check that the top of the pocket is even with the neighboring pocket on the same shaft. If one pocket is set too low (tight), this can cause the neighboring pocket to not seal.
- Check the bottom seal in the pocket. This can be checked with soapy water.
- Check all hoses and tubes for this pocket that they are not leaking.
- Remove and check the O rings in the spool valves for this pocket.
- Be sure the spool valves are not in backwards.

Tester rejects container from wrong pocket

This is most likely a setup issue where the MD30 thinks the container is in the wrong pocket. This could be a bad setup for most of the device locations in the tester.

- Feed a single calibrated leaker or gross leaker into the tester. Note the pocket that it goes into and note the pocket number of the spool valve that was depressed. Also note when the rejector fires compared to the position of the container.
- Look at the MI100 display to verify that one of the pockets is white in color. Also see that the Total Tested had increased by one. If it does not, this is an issue with the Container Present Sensor on the infeed of the tester. Verify that the prox is detecting cans as it goes by. Also go to Device Setup and follow the procedure for setting up the container present sensor.
- Note that the air spool valve charged the correct pocket. If not, go to the Device Setup Procedure and follow the Air Spool Device setup procedure.
- If the MI100 shows the correct pocket for the leaker, but fires either early or late by a pocket or two, follow the Device Setup Procedure for the Rejector to set the correct location.
- If the MI100 shows the correct pocket but does not reject, the setup for the Air Test location may need set-up. It is also possible that the odd and even transducer may be swapped.

Tester is not testing containers

One of the main reasons the tester would not test a container would be that it was not detected going into the tester.

- Look at the MI100 display to verify that the pockets fed are white in color. Also see that the Total Tested had increased by one. If it does not, this is an issue with the Container Present Sensor on the infeed of the tester. Verify that the prox is detecting cans as it goes by. Also go to Device Setup and follow the procedure for setting up the container present sensor.

Tester rejects the first few containers of a batch

This problem could either be a mechanical or a setup issue with the tester.

- The mechanical issue could be a bad regulator. If the test pressure in the tester fluctuates at the beginning of a test this may cause a fluctuation in the test results. The reject pressure values would be just over the reject level in this case. The test pressure gauge would fluctuate significantly when containers are initially fed into the tester. If this is the problem, replace the regulator with a master/slave type.
- If the tester is set up incorrectly, it is possible that the controller, when detecting containers going into the tester, is charging a couple pockets early into empty pockets. Then, if the rejector is set up incorrectly, the empty pockets are trying to reject late, rejecting the first few pockets with containers.
    - Go to the Device Setup Procedure from the Home Screen. Verify that all of the devices are set correctly using the initial tester setup procedure detailed in Chapter 5.

Rejector activates with no container in pocket

This is most likely an issue with the air spools. Check the running screen and verify that no containers are being fed into the tester. If the running screen shows a reject level of pressure, that pocket will be rejected as a precaution that there may have been a container in the pocket.

- If this occurs with a particular pocket, check the air spool for that pocket for any issues with the o-rings or that the spool valve may be reversed.
- If this comes from random pocket, check the test block for scoring.
- If this comes from a random pocket, and most of the pockets show a high pressure value, check if the pockets are being purged after being closed. A pocket closing without being purged will pressurize the pocket.

Pockets are not being charged

In most cases the MD30 is not getting a signal that containers are going into the tester.

- Go to Diagnostics – Control Outputs. Press the button for Air Spool Actuator to verify that the air spool actuator functions correctly.
- Verify that the container present prox is detecting containers as they are passing by.
- Go into Device Setup Procedure – Container Present and verify that the timing is set up correctly. The MD30 only accepts an input from container present sensor during one timing pulse. If the container is not captured or stable in the infeed screw or starwheel, this can cause the containers not to be detected.

Some pockets are not being charged

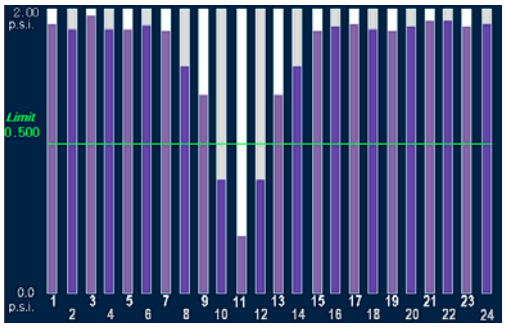
- When running the tester with cans, check the Running Screen. If cans are being consistently fed into the tester without gaps, there should not be any blue colored pockets on the screen. A blue pocket is a missing container. If this is the case, check the Container Present Sensor to make sure it is sensing the containers consistently. When a container is not identified going into a pocket, that pocket is not charged. Go to Device Setup Procedure – Container Present to verify the timing of the container present sensor.

Test Air or Leak Pressure values are either too high or too low

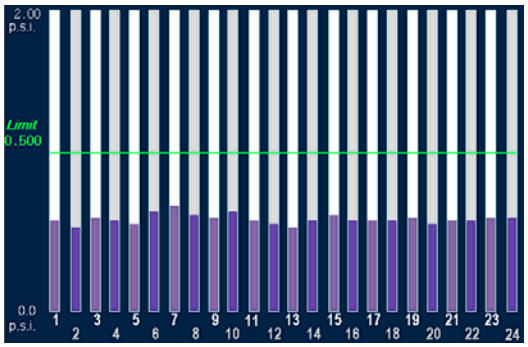
This is potentially an issue with the setup of the TD10 transducers with the system. Be sure that the part number on the Transducers match the part number specified in the Supply and Air Test Transducers section of the Parameter Setup screen. The system is set up so that an error will appear if a mismatch occurs. It is possible for this error to be overridden.

On Low Pressure Check, there is a large dip in the values.

This typically means that there is a large leak in one of the pockets. The bar graph display would typically look like this. The worst leak is typically centered in the "valley". When there is a large leak, that pocket typically pulls air pressure from neighboring pockets causing a valley. **Solution**: Check that the top seal is good, the pocket closed securely, and that the bottom seal is good. There could also be leaks in the Test spool, or brass fittings. If still not leak is found, check the charging spool and hose.



Minimum Pressure Values (good cans) seem to high for the tester



When running the tester with good cans, you should have some minimum pressure in each pocket. The problem occurs when that minimum pressure is too high. This can cause many false rejects. For a typical tester, the bars should be near the bottom of the screen, not as high as is shown to the right.
The most likely issue is that the purge time is too short. When the can is initially charged with pressure it expands, and if the pocket is not being vented at this time, you can have high values.
Solution: Check the purge location and make sure it meets the specification for the tester. Also, verify that the spools are being engaged and disengaged fully during the purge time.

Two Pockets (on opposite sides of the tester are not holding pressure

This situation is when two pockets on opposite sides of the tester are either not rejecting leakers or have a low pressure value for the low pressure check. The most likely problem may be the seam between the two halves of the test ring. If they are not level with respect to each other, the test block will either skip on the ridge, or be held away from the test ring surface, breaking the seal.
Solution: Adjust the test rings so that they are level with each other.

Appendix

TestAlert Accessories

AC400-7 / PS503 Relay Bank and Power Supply

7 relays for connecting MD30 DC outputs to the air tester solenoids and a 24vdc power supply mounted on DIN rail.

CBL113-x Cable for TD10

M12 connector cable for connecting the TD10 transducer to the MD30 controller.

CBL113-2	5-pin M12 connector, 2m length
CBL113-5	5-pin M12 connector, 5m length
CBL113-10	5-pin M12 connector, 10m length

CBL130-x Timing Generator Cables

M23 Quick Disconnect Cables to connect encoder to the MD30. Four twisted pairs and overall shield, quick disconnect on one side, flying leads on other.

CBL130-5	4-twisted pair cable with overall shield, 5m length
CBL130-10	4-twisted pair cable with overall shield, 10m length

CBL140-x Cable from MD30 to HMI

Multi conductor cable to attach MD30 to HMI. Flying leads on one side, DB-9 on the HMI side. Specify multiple lengths.

CBL140-1	1m cable length, 5 conductor plus shield, DB9 on one side of cable
CBL140-2	2m cable length, 5 conductor plus shield, DB9 on one side of cable
CBL140-5	5m cable length, 5 conductor plus shield, DB9 on one side of cable
CBL140-10	10m cable length, 5 conductor plus shield, DB9 on one side of cable

FD30 – Memory Card

Compact Flash Memory Card for the MI100 touchscreen. This memory card comes pre-loaded with configurations, user manual, and configuration tool. The memory card also holds the web server pages for the HMI.

Technical Specifications

MD30

Input Voltage	24VDC
Input Current	500mA
Operating Temp	0-60°C
Communication	HMI – RS422/485
Inputs	
Max input voltage	30VDC
Current	20mA max
Outputs	
Solenoid	24VDC sourcing
Current	1A continuous (2A max inrush)

MI100

Input Voltage	24VDC
Range	19.2 to 28.8VDC
Current	1.22A typical
Operating Temp	0 – 50°C (32-122°F)
Humidity	10-90% RH – non-condensing
Enclosure Rating	Equivalent to IP65f NEMA 4x/13 when installed in panel

AC400-7

Relay configuration	DPDT
Switching Current	15A
Coil Voltage	24VDC

PS503

Input Voltage	90-264VAC
Input Current	2.2A
Output Voltage	24VDC
Output Current	4.2A
Operating Temp.	-25 - 71°C

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Setup and Assistance and Training Classes are available from Prime Controls. Please contact us if you require any assistance.